[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Friday, April 01, 2011 10:10 AM
To: [redacted] NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: 2011 April Runoff Forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Gather around and call me on my cell asap. I've got to head to the office in a few minutes.

-----Original Message-----
From: [redacted] NWD02
Sent: Friday, April 01, 2011 9:59 AM
To: Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: 2011 April Runoff Forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

In the Comp-1Apr tab, Cell F6 contains the forecasted remaining runoff above Gavins Point. Everything else is static according to Kevin.

[redacted]

> -----Original Message-----
> From: Farhat, Jody S NWD02
> Sent: Friday, April 01, 2011 9:44 AM
> To: [redacted] NWD02; [redacted] NWD02; [redacted]
> A NWD02; [redacted] NWD02
> Subject: RE: 2011 April Runoff Forecast (UNCLASSIFIED)
>
> Classification: UNCLASSIFIED
> Caveats: NONE
>
> I'd like to have the estimate of Service level before we discuss the
> forecast. While I don't oppose what you've come up with as your
> runoff forecast, I do believe it's on the strong side considering what
> is actually out there in terms of plains snowpack (very little except
> north of the river in ND and the Milk basin) and the mountain snowpack
> is only slightly above normal and nothing to write home about.
>
> Jody
>
> -----Original Message-----
> From: [redacted] NWD02
> Sent: Friday, April 01, 2011 9:08 AM
> To: Farhat, Jody S NWD02; [redacted] NWD02; [redacted]
> A NWD02; [redacted] NWD02
> Subject: 2011 April Runoff Forecast (UNCLASSIFIED)
>

> Classification: UNCLASSIFIED
> Caveats: NONE
>
> Jody,
>
> Attached is the preliminary runoff forecast that Kevin and I have
> developed under careful consideration of the mountain snowpack,
> existing plains snow, basin hydrologic conditions and the expected
> climate outlook.
>
> BLUF: The forecast rose from 29.7 MAF to 34.6 MAF, which is now an
> upper decile runoff forecast.
>
> Runoff volumes for March were quite high as a result of elevated
> runoff overall, but especially in the Garrison, Oahe, and in the Sioux
> City reaches. March 2011 runoff above Sioux City, IA, was 231% of
> normal at
> 6653 KAF, and above Gavins Point Dam runoff was 213% of normal at 5501
> KAF. Fort Peck received 1049 KAF (176%), Garrison received 1567 KAF
> (156%), Oahe received 1806 KAF (319%), Fort Randall received 686 KAF
> (328%), Gavins Point received 392 KAF (190%), and the Sioux City reach
> received 1152 KAF (385%).
>
> The overall calendar year 2011 runoff forecast is 29.5 MAF (130% of
> normal) above Gavins Point Dam, which is an increase of 3.95 MAF from
> the March 2011 forecast. This increase is due in part to actual March
> runoff being higher than forecasted March runoff, an increase in
> forecasted runoff into the Garrison reach, and an increase in the
> expected mountain snowmelt runoff due to increased mountain SWE. The
> summation above Sioux City is 34.6 MAF (139% of normal), an increase
> of
> 4.6 MAF.
>
> Remaining plains snow pack (2.5-4.5 inches of SWE) in the Fort Peck to
> Garrison reach north of the Missouri River has not melted, and as a
> result Garrison is expected to receive up to 2.0 MAF of runoff in the
> month of April, which represents about 1.0 inch of snowmelt runoff
> from the contributing area covered with snow (35,000 square miles).
> The total March-April runoff forecast into Garrison is 3.5 MAF.
> Similar runoff volumes occurred in March and April of calendar years
> 1949 (2.9 MAF), 1960 (2.8 MAF), 1969 (3.4 MAF), and 1979 (4.5 MAF),
> which were all impacted by moderate to heavy plains snow in the Garrison reach.
>
> Mountain snow accumulations as a percent of long-term averages are
> 116% of normal above Fort Peck and 112% of normal in the Fort Peck to
> Garrison reach. As a result, the May-July runoff above Fort Peck is
> expected to be 122% of normal, while the Fort Peck to Garrison reach
> is expected to receive 110% of normal runoff using snow to runoff
> regression equations. Runoff in all reaches above the System are
> forecasted to return to normal by August 2011, while above average
> runoff is forecasted in the Gavins to Sioux City reach due to
> persistently high streamflow conditions.
>
> [redacted] and I are also examining the Service Level calculation and
> will revise it when we have agreed upon a final forecast.
>
> Please let us know when you are ready to discuss the forecast.

>
> Thanks.
>
> [redacted]
>
> [redacted].
> USACE, Northwestern Division
> Missouri Basin Water Management Division
> [redacted]
> [redacted]@usace.army.mil
>
>
> Classification: UNCLASSIFIED
> Caveats: NONE
>
>
>
> Classification: UNCLASSIFIED
> Caveats: NONE
>

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 01, 2011 11:57 AM
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Subject: Apr 1 Runoff Forecast and Service Level (UNCLASSIFIED)
Attachments: Runoff_Forecast_Apr2011.pdf; ServiceLevelComp_2011Apr01.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Attached is the final April 1 runoff forecast and service level computation.

[redacted]

[redacted].
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE
[redacted]
[redacted] (fax)

Classification: UNCLASSIFIED
Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Apr-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
				Values in 1000 Acre Feet					
	(History)								
JAN 2011	431	299	120	86	67	273	1,003	1,276	1,276
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	119	38	108	61	-33	233	293	526	526
% OF NORM	138%	115%	998%	346%	67%	682%	141%	170%	170%
FEB 2011	580	457	318	217	236	524	1,808	2,333	3,609
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	220	101	228	168	106	432	823	1,256	1,782
% OF NORM	161%	128%	354%	443%	182%	570%	184%	217%	198%
MAR 2011	1,049	1,567	1,806	686	392	1,152	5,501	6,653	10,262
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	453	564	1,239	477	186	853	2,920	3,773	5,555
% OF NORM	176%	156%	319%	328%	190%	385%	213%	231%	218%
	(Forecast)								
APR 2011	668	1,535	650	207	250	1,279	3,310	4,589	14,851
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	19	455	169	63	70	919	776	1,695	7,250
% OF NORM	103%	142%	135%	144%	139%	355%	131%	159%	195%
MAY 2011	1,236	1,355	400	147	186	700	3,324	4,024	18,875
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	155	110	88	0	0	408	353	761	8,011
% OF NORM	114%	109%	128%	100%	100%	240%	112%	123%	174%
JUN 2011	1,851	2,916	460	152	178	350	5,557	5,907	24,782
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	239	249	37	0	0	64	525	589	8,600
% OF NORM	115%	109%	109%	100%	100%	122%	110%	111%	153%
JUL 2011	938	1,946	185	57	137	250	3,263	3,513	28,295
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	119	170	6	0	0	32	295	327	8,927
% OF NORM	115%	110%	103%	100%	100%	115%	110%	110%	146%
AUG 2011	353	604	65	39	115	150	1,176	1,326	29,621
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	0	0	0	19	0	19	8,946
% OF NORM	100%	100%	100%	100%	100%	115%	100%	101%	143%
SEP 2011	333	452	111	38	111	110	1,045	1,155	30,776
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	8,957
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	141%
OCT 2011	385	523	66	5	120	86	1,099	1,185	31,961
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	8,965
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	139%
NOV 2011	384	398	67	6	118	83	973	1,056	33,017
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	8,972
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	137%
DEC 2011	329	247	0	12	100	56	688	744	33,762
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	8,976
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	136%
				Calendar Year Totals					
	8,537	12,300	4,249	1,653	2,010	5,013	28,749	33,762	
NORMAL	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
DEPARTURE	1,324	1,688	1,876	770	329	2,990	5,987	8,976	
% OF NORM	118%	116%	179%	187%	120%	248%	126%	136%	

Service Level Determination
1-Apr-2011

Mainstem System Storage		61.7 MAF	04/01/2011 - from database or bulletin
Forecasted Remaining Runoff Above Gavins thru end of year		20.4 MAF	Total Forecasted ab Gavins min Jan Feb Mar actuals (28.749 - 1.003 - 1.808 - 5.501)
Tributary Storage Deficiency/Excess		-0.9 MAF	Determine trib deficiency/excess ~ 5.5 MAF
Total Water Supply		81.3 MAF	This is the value that is used on Plate VI-1 - based on this number, adjust rows 11 and 12 (lower and upper limits)
Water Supply from Plate VI-1 -	40	78.9 MAF	Find lower limit for Apr 1
Water Supply from Plate VI-1 -	50	83.7 MAF	Find upper limit for Apr 1
Service Level (from Plate VI-1)		45,000 cfs	
Increase over full service level		10,000 cfs	
Revised Targets			
Sioux City		41,000 cfs	
Omaha		41,000 cfs	
Nebraska City		47,000 cfs	
Kansas City		51,000 cfs	

*Service level revised based on a check of Plate VI-1. The Plate indicated a level near expanded full service.
The check indicated the plate did not properly take into account the Jan/Feb runoff of the following year.
Winter releases were higher than 20,000 cfs for some evacuation scenarios.
The base of the annual flood control zone was now 56.8 MAF instead of 57.1 MAF.

[redacted] NWO

From: [redacted]NWD02
Sent: Friday, April 01, 2011 9:59 AM
To: Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: 2011 April Runoff Forecast (UNCLASSIFIED)
Attachments: MM-PlateVI-1-2011-computation.xlsx

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

In the Comp-1Apr tab, Cell F6 contains the forecasted remaining runoff above Gavins Point. Everything else is static according to Kevin.

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>
> [redacted]
>
> [redacted].
> USACE, Northwestern Division
> Missouri Basin Water Management Division
> [redacted]
> [redacted]@usace.army.mil
>

Service Level Determination
1-Apr-2011

Mainstem System Storage		61.7 MAF	04/01/2011 - from data
Forecasted Remaining Runoff Above Gavins thru end of year		21.2 MAF	Total Forecasted ab G
Tributary Storage Deficiency/Excess		-0.9 MAF	Determine trib deficien
Total Water Supply		82.1 MAF	This is the value that is
Water Supply from Plate VI-1 -	40	78.9 MAF	Find lower limit for Apr
Water Supply from Plate VI-1 -	50	83.7 MAF	Find upper limit for Apr
Service Level (from Plate VI-1)		47,000 cfs	
Increase over full service level		12,000 cfs	
Revised Targets			
Sioux City		43,000 cfs	
Omaha		43,000 cfs	
Nebraska City		49,000 cfs	
Kansas City		53,000 cfs	

*Service level revised based on a check of Plate VI-1. The Plate indicated a level near expanded full service.
The check indicated the plate did not properly take into account the Jan/Feb runoff of the following year.
Winter releases were higher than 20,000 cfs for some evacuation scenarios.
The base of the annual flood control zone was now 56.8 MAF instead of 57.1 MAF.

ıbase or bulletin
avins min Jan Feb Mar actuals (29.5 - 1.0 - 1.8 - 5.5)
cy/excess ~ 5.5 MAF

ı used on Plate VI-1 - based on this number, adjust rows 11 and 12 (lower and upper limits)

1
1

A		LIMA	CLCA	HEBN	CAFE	GDMT	TIBR	BULA	BOYN	BUBI	YETL				
B		Red Rock	Red Rock	-Madison	am-Missouri	Fork Sun	n-Marias	Bull Lake	am-Wind	shoshone	n-Bighorn	Lake	Storage	64900	
C	GMT-06:00	Stor	Stor	Stor	Stor	Stor	Stor	Stor	Stor	Stor	Stor		Runoff	9202	
E													trib excess	647	
F		usbr-rev	usbr-rev	usbr-rev	usbr-rev	usbr-rev	usbr-rev	usbr-rev	usbr-rev	usbr-rev	usbr-rev				
Units		ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft		Total	74749	
Type		INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL				
1	17Jun2010	75839	178558	381112	1901569	96542	812709	129157	679536	543985	1047751		trib ex??	1147	500
2	18Jun2010	75901	181214	380332	1917298	95765	822760	131062	685426	555999	1070029		New total	75896	
3	19Jun2010	76261	182941	380332	1926022	95596	829779	132173	684136	559110	1080095				
4	20Jun2010	75839	184304	380332	1936784	95648	834292	133163	683029	563368	1088149				
5	21Jun2010	76079	185357	380465	1947560	96205	838024	133914	683398	567103	1095945				
6	22Jun2010	77700	186201	380332	1953642	96503	842602	134367	685985	570310	1108074				
7	23Jun2010	77401	186887	380852	1957693	96413	848044	134790	688580	571092	1117019				
8	24Jun2010	77099	187416	380985	1959723	96399	852365	135245	690619	575326	1124987				
9	25Jun2010	77281	187785	380205	1964457	96413	855877	136001	694711	578626	1130504		1-Jul	72519	Svc = 40
10	26Jun2010	77401	187997	382800	1963110	96399	859240	136818	698831	585403	1137226		1-Jul	75996	Svc = 50
11	27Jun2010	77401	188209	383453	1965812	96192	861269	137152	705225	589363	1142716				
	28-Jun-10	77401	188209	383453	1965812	96192	861269	137152	705225	589363	1137082			74749	
	29-Jun-10	77219	188473	383973	1967168	95765	863470	137365	711478	593785	1140688			0.6	
	30-Jun-10	77099	188685	384880	1967168	95235	865342	137761	715673	598088	1143293				
	1-Jul-10	77219	188897	385007	1966490	94886	662901	138189	720458	603139	1143728	6147	compute	74258	svc = 45
														1.0	
	28-Jul-10	66451	173902	377217	1870267	48411	874599	148439	699956	612410	1067266				
	29-Jul-10	66002	172773	376563	1867941	46287	874258	147908	699014	611475	1064144				
	30-Jul-10	65850	171541	375523	1861976	44218	873049	147440	696956	610152	1060547				
	31-Jul-10	65550	170724	375396	1864622	42108	873049	146971	696956	608580	1057100				
	1-Aug-10	65150	169701	374492	1857998	40054	872532	146534	694902	606936	1054288	5939	trib excess	439	
	29-Sep-10	46961	143153	343798	1768094	15926	842602	66454	639569	487193	962612				
	30-Sep-10	46920	142912	343556	1766465	16240	842438	65846	639219	485526	960869	5310	trib excess		
	28-Feb-11	49,661	160,106	298,361	1,418,824	16,041	769,201	71,250	597,850	438,145	825,277	4645			
	31-Mar-11	50,607	161,607	284,182	1,391,407	16,146	793,010	70,915	595,410	433,323	835,859	4632			

from table
from table

	40	50	60	70
1-Jan	82439	87891	93553	98553
2-Jan				
3-Jan				
4-Jan				
5-Jan				
6-Jan				
7-Jan				
8-Jan				
9-Jan				
10-Jan				
11-Jan				
12-Jan				
13-Jan				
14-Jan				
15-Jan				
16-Jan				
17-Jan				
18-Jan				
19-Jan				
20-Jan				
21-Jan				
22-Jan				
23-Jan				
24-Jan				
25-Jan				
26-Jan				
27-Jan				
28-Jan				
29-Jan				
30-Jan				
31-Jan	81394	86661	92120	97120
1-Feb				
2-Feb				
3-Feb				
4-Feb				
5-Feb				
6-Feb				
7-Feb				
8-Feb				
9-Feb				
10-Feb				
11-Feb				
12-Feb				
13-Feb				
14-Feb				
15-Feb				
16-Feb				
17-Feb				
18-Feb				
19-Feb				
20-Feb				
21-Feb				
22-Feb				
23-Feb				

24-Feb				
25-Feb				
26-Feb				
27-Feb				
28-Feb	80450	85550	90950	95950
1-Mar	80416	85510	90902	95902
2-Mar	80383	85471	90855	95855
3-Mar	80349	85431	90807	95807
4-Mar	80315	85391	90760	95760
5-Mar	80281	85352	90712	95712
6-Mar	80248	85312	90664	95664
7-Mar	80214	85272	90617	95617
8-Mar	80180	85233	90569	95569
9-Mar	80147	85193	90522	95522
10-Mar	80113	85153	90474	95474
11-Mar	80079	85114	90426	95426
12-Mar	80045	85074	90379	95379
13-Mar	80012	85034	90331	95331
14-Mar	79978	84995	90284	95284
15-Mar	79944	84955	90236	95236
16-Mar	79905	84909	90182	95182
17-Mar	79859	84858	90123	95123
18-Mar	79807	84800	90057	95057
19-Mar	79750	84737	89986	94986
20-Mar	79687	84667	89909	94909
21-Mar	79624	84592	89825	94825
22-Mar	79561	84511	89736	94736
23-Mar	79498	84428	89641	94641
24-Mar	79435	84345	89540	94540
25-Mar	79373	84263	89437	94433
26-Mar	79310	84180	89335	94320
27-Mar	79247	84097	89232	94201
28-Mar	79184	84014	89130	94078
29-Mar	79121	83932	89027	93956
30-Mar	79058	83849	88924	93833
31-Mar	78995	83766	88822	93711
1-Apr	78932	83684	88719	93589
2-Apr	78870	83601	88617	93466
3-Apr	78807	83518	88514	93344
4-Apr	78744	83435	88412	93221
5-Apr	78681	83353	88309	93099
6-Apr	78618	83270	88207	92977
7-Apr	78555	83187	88104	92854
8-Apr	78492	83105	88002	92732
9-Apr	78429	83022	87899	92610
10-Apr	78367	82939	87796	92487
11-Apr	78304	82856	87694	92365
12-Apr	78241	82774	87591	92242
13-Apr	78178	82691	87489	92120
14-Apr	78115	82608	87386	91998
15-Apr	78052	82526	87284	91875
16-Apr	77989	82443	87181	91753
17-Apr	77926	82360	87079	91631
18-Apr	77864	82277	86976	91508
19-Apr	77801	82195	86874	91386

20-Apr	77738	82112	86771	91263
21-Apr	77675	82029	86668	91141
22-Apr	77612	81947	86566	91019
23-Apr	77549	81864	86463	90896
24-Apr	77486	81781	86361	90774
25-Apr	77423	81698	86258	90651
26-Apr	77361	81616	86156	90529
27-Apr	77298	81533	86053	90407
28-Apr	77235	81450	85951	90284
29-Apr	77172	81368	85848	90162
30-Apr	77109	81285	85745	90040
1-May	77044	81200	85640	89915
2-May	76978	81114	85535	89790
3-May	76913	81029	85430	89665
4-May	76847	80944	85325	89540
5-May	76782	80858	85220	89415
6-May	76716	80773	85115	89290
7-May	76651	80688	85010	89165
8-May	76585	80603	84904	89040
9-May	76520	80517	84799	88915
10-May	76454	80432	84694	88790
11-May	76383	80347	84589	88665
12-May	76307	80261	84484	88540
13-May	76231	80176	84379	88415
14-May	76156	80091	84274	88290
15-May	76080	80006	84169	88165
16-May	76004	79920	84063	88040
17-May	75928	79835	83958	87915
18-May	75853	79750	83853	87790
19-May	75777	79664	83748	87665
20-May	75701	79579	83643	87540
21-May	75625	79494	83538	87415
22-May	75550	79408	83433	87290
23-May	75474	79323	83328	87165
24-May	75398	79238	83222	87041
25-May	75322	79153	83117	86916
26-May	75246	79067	83012	86791
27-May	75171	78982	82907	86666
28-May	75095	78897	82802	86541
29-May	75019	78811	82697	86416
30-May	74943	78726	82592	86291
31-May	74868	78641	82487	86166
1-Jun	74792	78556	82382	86041
2-Jun	74716	78471	82277	85916
3-Jun	74640	78386	82172	85792
4-Jun	74565	78301	82067	85667
5-Jun	74489	78215	81962	85542
6-Jun	74413	78130	81857	85417
7-Jun	74337	78045	81752	85292
8-Jun	74261	77960	81647	85168
9-Jun	74186	77875	81542	85043
10-Jun	74110	77790	81437	84918
11-Jun	74034	77705	81332	84793
12-Jun	73958	77620	81227	84669
13-Jun	73883	77535	81123	84544

14-Jun	73807	77450	81018	84419
15-Jun	73731	77364	80913	84294
16-Jun	73655	77279	80808	84170
17-Jun	73580	77194	80703	84045
18-Jun	73504	77109	80598	83920
19-Jun	73428	77024	80493	83795
20-Jun	73352	76939	80388	83671
21-Jun	73276	76854	80283	83546
22-Jun	73201	76769	80178	83421
23-Jun	73125	76684	80073	83296
24-Jun	73049	76599	79968	83171
25-Jun	72973	76514	79863	83047
26-Jun	72898	76428	79758	82922
27-Jun	72822	76343	79654	82797
28-Jun	72746	76258	79549	82672
29-Jun	72670	76173	79444	82548
30-Jun	72595	76088	79339	82423
1-Jul	72519	75996	79227	82291
2-Jul	72443	75903	79114	82159
3-Jul	72367	75811	79002	82027
4-Jul	72291	75718	78890	81895
5-Jul	72216	75626	78777	81762
6-Jul	72140	75534	78665	81630
7-Jul	72064	75441	78553	81498
8-Jul	71988	75349	78441	81366
9-Jul	71913	75256	78328	81234
10-Jul	71837	75164	78216	81102
11-Jul	71761	75071	78104	80970
12-Jul	71685	74979	77992	80838
13-Jul	71610	74887	77879	80706
14-Jul	71534	74794	77767	80574
15-Jul	71458	74702	77655	80441
16-Jul	71382	74609	77543	80309
17-Jul	71306	74517	77430	80177
18-Jul	71231	74424	77318	80045
19-Jul	71155	74332	77206	79913
20-Jul	71079	74239	77093	79781
21-Jul	71003	74147	76981	79649
22-Jul	70928	74055	76869	79517
23-Jul	70852	73962	76757	79385
24-Jul	70776	73870	76644	79253
25-Jul	70700	73777	76532	79120
26-Jul	70625	73685	76420	78988
27-Jul	70549	73592	76308	78856
28-Jul	70473	73500	76195	78724
29-Jul	70397	73408	76083	78592
30-Jul	70321	73315	75971	78460
31-Jul	70246	73223	75859	78328
1-Aug	70170	73127	75743	78193
2-Aug	70094	73032	75628	78057
3-Aug	70018	72936	75512	77922
4-Aug	69943	72840	75397	77787
5-Aug	69867	72745	75281	77651
6-Aug	69791	72649	75166	77516
7-Aug	69715	72554	75050	77381

8-Aug	69640	72458	74935	77246
9-Aug	69564	72362	74820	77110
10-Aug	69488	72267	74704	76975
11-Aug	69412	72171	74589	76840
12-Aug	69336	72075	74473	76704
13-Aug	69261	71980	74358	76569
14-Aug	69185	71884	74242	76434
15-Aug	69109	71789	74127	76299
16-Aug	69033	71693	74012	76163
17-Aug	68958	71597	73896	76028
18-Aug	68882	71502	73781	75893
19-Aug	68806	71406	73665	75758
20-Aug	68730	71311	73550	75622
21-Aug	68655	71215	73434	75487
22-Aug	68579	71119	73319	75352
23-Aug	68503	71024	73203	75216
24-Aug	68427	70928	73088	75081
25-Aug	68351	70833	72973	74946
26-Aug	68276	70737	72857	74811
27-Aug	68200	70641	72742	74675
28-Aug	68124	70546	72626	74540
29-Aug	68048	70450	72511	74405
30-Aug	67973	70355	72395	74270
31-Aug	67897	70259	72280	74134
1-Sep	67822	70165	72166	74000
2-Sep	67748	70070	72051	73866
3-Sep	67673	69976	71937	73732
4-Sep	67599	69881	71823	73598
5-Sep	67524	69787	71709	73464
6-Sep	67449	69693	71594	73330
7-Sep	67375	69598	71480	73196
8-Sep	67300	69504	71366	73062
9-Sep	67226	69409	71252	72928
10-Sep	67151	69315	71137	72793
11-Sep	67076	69220	71023	72659
12-Sep	67002	69126	70909	72525
13-Sep	66927	69032	70795	72391
14-Sep	66853	68937	70680	72257
15-Sep	66778	68843	70566	72123
16-Sep	66704	68748	70452	71989
17-Sep	66629	68654	70338	71855
18-Sep	66554	68560	70223	71721
19-Sep	66480	68465	70109	71587
20-Sep	66405	68371	69995	71453
21-Sep	66331	68276	69881	71319
22-Sep	66256	68182	69766	71184
23-Sep	66181	68087	69652	71050
24-Sep	66107	67993	69538	70916
25-Sep	66032	67899	69424	70782
26-Sep	65958	67804	69309	70648
27-Sep	65883	67710	69195	70514
28-Sep	65809	67615	69081	70380
29-Sep	65734	67521	68967	70246
30-Sep	65659	67427	68852	70112
1-Oct	65586	67333	68739	69979

2-Oct	65513	67240	68626	69846
3-Oct	65439	67147	68513	69713
4-Oct	65366	67054	68400	69580
5-Oct	65292	66960	68287	69447
6-Oct	65219	66867	68174	69314
7-Oct	65146	66774	68061	69181
8-Oct	65072	66681	67948	69049
9-Oct	64999	66588	67835	68916
10-Oct	64926	66494	67722	68783
11-Oct	64852	66401	67609	68650
12-Oct	64779	66308	67496	68517
13-Oct	64705	66215	67383	68384
14-Oct	64632	66121	67270	68251
15-Oct	64559	66028	67157	68118
16-Oct	64485	65935	67043	67985
17-Oct	64412	65842	66930	67853
18-Oct	64338	65749	66817	67720
19-Oct	64265	65655	66704	67587
20-Oct	64192	65562	66591	67454
21-Oct	64118	65469	66478	67321
22-Oct	64045	65376	66365	67188
23-Oct	63971	65282	66252	67055
24-Oct	63898	65189	66139	66922
25-Oct	63825	65096	66026	66789
26-Oct	63751	65003	65913	66656
27-Oct	63678	64910	65800	66524
28-Oct	63605	64816	65687	66391
29-Oct	63531	64723	65574	66258
30-Oct	63458	64630	65461	66125
31-Oct	63384	64537	65348	65992
1-Nov	63313	64445	65236	65861
2-Nov	63241	64354	65125	65730
3-Nov	63170	64262	65014	65599
4-Nov	63098	64171	64902	65468
5-Nov	63026	64079	64791	65336
6-Nov	62955	63988	64680	65205
7-Nov	62883	63897	64569	65074
8-Nov	62812	63805	64457	64943
9-Nov	62740	63714	64346	64812
10-Nov	62668	63622	64235	64681
11-Nov	62597	63531	64124	64550
12-Nov	62525	63439	64012	64419
13-Nov	62454	63348	63901	64288
14-Nov	62382	63256	63790	64156
15-Nov	62310	63165	63678	64025
16-Nov	62239	63074	63567	63894
17-Nov	62167	62982	63456	63763
18-Nov	62095	62891	63345	63632
19-Nov	62024	62799	63233	63501
20-Nov	61952	62708	63122	63370
21-Nov	61881	62616	63011	63239
22-Nov	61809	62525	62900	63108
23-Nov	61737	62433	62788	62976
24-Nov	61666	62342	62677	62845
25-Nov	61594	62251	62566	62714

26-Nov	61523	62159	62454	62583
27-Nov	61451	62068	62343	62452
28-Nov	61379	61976	62232	62321
29-Nov	61308	61885	62121	62190
30-Nov	61236	61793	62009	62059
1-Dec	61165	61702	61898	61934
2-Dec	61093	61611	61787	61814
3-Dec	61021	61519	61676	61701
4-Dec	60956	61434	61570	61594
5-Dec	60896	61354	61471	61492
6-Dec	60842	61280	61377	61397
7-Dec	60795	61213	61290	61308
8-Dec	60751	61151	61208	61224
9-Dec	60708	61095	61133	61147
10-Dec	60664	61046	61063	61075
11-Dec	60621	60998	61000	61007
12-Dec	60577	60950	60942	60946
13-Dec	60534	60903	60890	60890
14-Dec	60490	60855	60842	60837
15-Dec	60447	60808	60795	60789
16-Dec	60404	60760	60747	60742
17-Dec	60360	60712	60700	60694
18-Dec	60317	60665	60652	60646
19-Dec	60273	60617	60604	60599
20-Dec	60230	60570	60557	60551
21-Dec	60186	60522	60509	60504
22-Dec	60143	60474	60462	60456
23-Dec	60099	60427	60414	60408
24-Dec	60056	60379	60366	60361
25-Dec	60013	60332	60319	60313
26-Dec	59969	60284	60271	60266
27-Dec	59926	60236	60224	60218
28-Dec	59882	60189	60176	60170
29-Dec	59839	60141	60128	60123
30-Dec	59795	60094	60081	60075
31-Dec	59752	60046	60033	60028
1-Jan	59709	59998	59986	59980
2-Jan	59665	59951	59938	59932
3-Jan	59622	59903	59890	59885
4-Jan	59578	59856	59843	59837
5-Jan	59535	59808	59795	59790
6-Jan	59491	59760	59748	59742
7-Jan	59448	59713	59700	59694
8-Jan	59404	59665	59652	59647
9-Jan	59361	59618	59605	59599
10-Jan	59318	59570	59557	59552
11-Jan	59274	59522	59510	59504
12-Jan	59231	59475	59462	59456
13-Jan	59187	59427	59414	59409
14-Jan	59144	59380	59367	59361
15-Jan	59100	59332	59319	59314
16-Jan	59057	59284	59272	59266
17-Jan	59014	59237	59224	59218
18-Jan	58970	59189	59176	59171
19-Jan	58927	59141	59129	59123

20-Jan	58883	59094	59081	59076
21-Jan	58840	59046	59034	59028
22-Jan	58796	58999	58986	58980
23-Jan	58753	58951	58938	58933
24-Jan	58709	58903	58891	58885
25-Jan	58666	58856	58843	58838
26-Jan	58623	58808	58795	58790
27-Jan	58579	58761	58748	58742
28-Jan	58536	58713	58700	58695
29-Jan	58492	58665	58653	58647
30-Jan	58449	58618	58605	58600
31-Jan	58405	58570	58557	58552
1-Feb	58358	58519	58506	58501
2-Feb	58311	58468	58455	58449
3-Feb	58264	58416	58404	58398
4-Feb	58217	58365	58352	58347
5-Feb	58170	58314	58301	58295
6-Feb	58122	58262	58250	58244
7-Feb	58075	58211	58198	58193
8-Feb	58028	58160	58147	58141
9-Feb	57981	58108	58096	58090
10-Feb	57934	58057	58044	58039
11-Feb	57887	58006	57993	57987
12-Feb	57840	57954	57942	57936
13-Feb	57792	57903	57890	57885
14-Feb	57745	57852	57839	57833
15-Feb	57698	57800	57788	57782
16-Feb	57651	57749	57736	57731
17-Feb	57604	57698	57685	57679
18-Feb	57557	57646	57634	57628
19-Feb	57509	57595	57582	57577
20-Feb	57462	57544	57531	57526
21-Feb	57415	57493	57480	57474
22-Feb	57368	57441	57428	57423
23-Feb	57321	57390	57377	57372
24-Feb	57274	57339	57326	57320
25-Feb	57227	57287	57274	57269
26-Feb	57179	57236	57223	57218
27-Feb	57132	57185	57172	57166
28-Feb	57085	57133	57121	57115

[redacted]-NWO

From: [redacted] NWD02
Sent: Friday, April 01, 2011 9:08 AM
To: Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02; [redacted], [redacted] NWD02
Subject: 2011 April Runoff Forecast (UNCLASSIFIED)
Attachments: Runoff_Forecast_Apr2011.pdf; 2011AprForecast.docx

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Attached is the preliminary runoff forecast that Kevin and I have developed under careful consideration of the mountain snowpack, existing plains snow, basin hydrologic conditions and the expected climate outlook.

BLUF: The forecast rose from 29.7 MAF to 34.6 MAF, which is now an upper decile runoff forecast.

Runoff volumes for March were quite high as a result of elevated runoff overall, but especially in the Garrison, Oahe, and in the Sioux City reaches. March 2011 runoff above Sioux City, IA, was 231% of normal at 6653 KAF, and above Gavins Point Dam runoff was 213% of normal at 5501 KAF. Fort Peck received 1049 KAF (176%), Garrison received 1567 KAF (156%), Oahe received 1806 KAF (319%), Fort Randall received 686 KAF (328%), Gavins Point received 392 KAF (190%), and the Sioux City reach received 1152 KAF (385%).

The overall calendar year 2011 runoff forecast is 29.5 MAF (130% of normal) above Gavins Point Dam, which is an increase of 3.95 MAF from the March 2011 forecast. This increase is due in part to actual March runoff being higher than forecasted March runoff, an increase in forecasted runoff into the Garrison reach, and an increase in the expected mountain snowmelt runoff due to increased mountain SWE. The summation above Sioux City is 34.6 MAF (139% of normal), an increase of 4.6 MAF.

Remaining plains snow pack (2.5-4.5 inches of SWE) in the Fort Peck to Garrison reach north of the Missouri River has not melted, and as a result Garrison is expected to receive up to 2.0 MAF of runoff in the month of April, which represents about 1.0 inch of snowmelt runoff from the contributing area covered with snow (35,000 square miles). The total March-April runoff forecast into Garrison is 3.5 MAF. Similar runoff volumes occurred in March and April of calendar years 1949 (2.9 MAF), 1960 (2.8 MAF), 1969 (3.4 MAF), and 1979 (4.5 MAF), which were all impacted by moderate to heavy plains snow in the Garrison reach.

Mountain snow accumulations as a percent of long-term averages are 116% of normal above Fort Peck and 112% of normal in the Fort Peck to Garrison reach. As a result, the May-July runoff above Fort Peck is expected to be 122% of normal, while the Fort Peck to Garrison reach is expected to receive 110% of normal runoff using snow to runoff regression equations. Runoff in all reaches above the System are forecasted to return to normal by August 2011, while above average runoff is forecasted in the Gavins to Sioux City reach due to persistently high streamflow conditions.

Kevin, Mike and I are also examining the Service Level calculation and will revise it when we have agreed upon a final forecast.

Please let us know when you are ready to discuss the forecast.

Thanks.

[redacted]

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Missouri Basin Water Management Division
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Classification: UNCLASSIFIED
Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Apr-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
				Values in 1000 Acre Feet					
	(History)								
JAN 2011	431	299	120	86	67	273	1,003	1,276	1,276
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	119	38	108	61	-33	233	293	526	526
% OF NORM	138%	115%	998%	346%	67%	682%	141%	170%	170%
FEB 2011	580	457	318	217	236	524	1,808	2,333	3,609
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	220	101	228	168	106	432	823	1,256	1,782
% OF NORM	161%	128%	354%	443%	182%	570%	184%	217%	198%
MAR 2011	1,049	1,567	1,806	686	392	1,152	5,501	6,653	10,262
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	453	564	1,239	477	186	853	2,920	3,773	5,555
% OF NORM	176%	156%	319%	328%	190%	385%	213%	231%	218%
	(Forecast)								
APR 2011	668	1,964	704	207	301	1,279	3,844	5,123	15,385
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	19	884	223	63	121	919	1,310	2,229	7,784
% OF NORM	103%	182%	146%	144%	167%	355%	152%	177%	202%
MAY 2011	1,314	1,355	400	147	186	700	3,402	4,102	19,487
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	233	110	88	0	0	408	431	839	8,623
% OF NORM	122%	109%	128%	100%	100%	240%	115%	126%	179%
JUN 2011	1,969	2,916	460	152	178	350	5,675	6,025	25,512
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	357	249	37	0	0	64	643	707	9,330
% OF NORM	122%	109%	109%	100%	100%	122%	113%	113%	158%
JUL 2011	997	1,946	185	57	137	250	3,322	3,572	29,084
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	178	170	6	0	0	32	354	386	9,716
% OF NORM	122%	110%	103%	100%	100%	115%	112%	112%	150%
AUG 2011	353	604	65	39	115	150	1,176	1,326	30,410
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	0	0	0	19	0	19	9,735
% OF NORM	100%	100%	100%	100%	100%	115%	100%	101%	147%
SEP 2011	333	452	111	38	111	110	1,045	1,155	31,565
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	9,746
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	145%
OCT 2011	385	523	66	5	120	86	1,099	1,185	32,750
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	9,754
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	142%
NOV 2011	384	398	67	6	118	83	973	1,056	33,806
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	9,761
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	141%
DEC 2011	329	247	0	12	100	56	688	744	34,550
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	9,765
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	139%
				Calendar Year Totals					
	8,791	12,729	4,303	1,653	2,061	5,013	29,537	34,550	
NORMAL	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
DEPARTURE	1,578	2,117	1,930	770	380	2,990	6,775	9,765	
% OF NORM	122%	120%	181%	187%	123%	248%	130%	139%	

April 2011 Calendar Year Runoff Forecast

2011 March Runoff

March 2011 runoff above Sioux City, IA, was 231% of normal at 6653 KAF, and above Gavins Point Dam runoff was 213% of normal at 5501 KAF. The actual March runoff into the system was 2451 KAF greater than forecasted March runoff above Gavins Point. Fort Peck received 1049 KAF (176%), Garrison received 1567 KAF (156%), Oahe received 1806 KAF (319%), Fort Randall received 686 KAF (328%), Gavins Point received 392 KAF (190%), and the Sioux City reach received 1152 KAF (385%).

Antecedent Moisture & Precipitation

Soil moisture conditions on March 31, 2011, continue to rank very high in the Northern Plains including eastern Montana and the Dakotas, and the Northern Rockies in Montana and northwest Wyoming (Figure 1). Soil moisture conditions rank in at least the 70th percentile, with particularly wet areas ranking 90 percent or higher. The Upper Missouri basin in the Northern Rockies, northern Montana, northern North Dakota, and eastern South Dakota all rank in the 95th percentile or higher. Wetter than normal soil conditions are also present northern Nebraska and northwest Iowa. Drier than normal soil conditions have developed in eastern Colorado, western Kansas and a small portion of central Missouri.

Thirty day precipitation departures as a percent of normal ending on March 31, 2011 is shown in Figure 2. A large area extending from eastern Montana through central North Dakota, also including northeast Wyoming, and western and northern South Dakota received greater than 150% of normal precipitation in March. A large area within this region including northeast Montana, and western and central North Dakota has been very wet, receiving over 200% of normal precipitation with some areas receiving over 300% of normal precipitation. In other areas such as central South Dakota, Nebraska, Iowa, and Kansas, precipitation was less than 75% or normal in March.

Mountain Snow Pack

Mountain snowpack as of March 31, 2011 was 116% of normal above Fort Peck and 112% of normal in the Fort Peck to Garrison reach. This is an increase from 110% of normal above Fort Peck and 108% of normal in the Fort Peck to Garrison reach on February 28, 2011. Missouri River Basin mountain snowpack normally peaks near on April 15. By April 1, normally 96% of the peak accumulation has occurred. The current SWE accumulations in each reach are greater than the normal annual peak accumulations.

Plains Snow Pack

The Plains snow pack on April 1, 2010, contains pockets of relatively heavy snow cover within a light to average cover extending from north central Montana through eastern Montana and across the Dakotas. Very little snow cover exists in Iowa or Nebraska. Snow water equivalent conditions are shown in Figures 3 and 4. Figure 3 shows the plains SWE in inches on March 31, 2011. Figure 4 shows the plains SWE on March 10, 2011, which is near the date of peak SWE accumulation prior to the snowmelt that melted a majority of the snow in South Dakota.

Above Fort Peck Lake, the snow cover has thinned significantly; however, 1-2 inch amounts of SWE remain in central Montana, and trace amounts of SWE remain south of the reservoir.

The Fort Peck to Garrison reach contains the greatest amounts of plains snow with very heavy pockets of SWE remain in the Milk River Basin and tributary basins primarily north of the Missouri River extending into north central North Dakota. Very limited snowmelt has occurred in the Fort Peck to Garrison reach north of the Missouri River; however, south of the River in the lower Yellowstone and Little Missouri River basins, some snowmelt and runoff has occurred. SWE amounts in the Milk River Basin range from 2.5 to 4.5 inches according to measurements, while in the Missouri River reach from Fort Peck to Williston, 2-4 inches of SWE remain. NOAA's NOHRSC office is estimating heavy pockets of 6-8 inches of SWE in the Milk River Basin in Canada and in an areas extending from east of Fort Peck, northwestward into Canada (Figure 3). In the lower Yellowstone and Little Missouri River Basins, snow cover is sparse, yet some remaining SWE and meltwater has not reached rivers and streams. Snow conditions at the end of March bare similarities to the mid-March SWE in the Garrison reach that was present in 1969.

In the Oahe reach, much of the snow in the tributaries west of the Missouri River has melted leaving only heavy pockets in tree rows and protected areas. Only a trace to 1-inch amounts covers the plains as a result of recent light snow. Areas within the Knife and Heart River Basins in North Dakota still contain small pockets of 2-3 inches of SWE (adjusted down from NOHRSC estimates). In the Oahe to Gavins Point reaches, trace to 0.5-inch amounts exist as a result of recent snows.

In the Gavins Point to Sioux City reach, a trace to 0.5-inch coverage exists in the James and Big Sioux River Basins south of U.S. Highway 212 that runs through Watertown, SD. In mid-March most of the plains snow melted as a result of warmer temperatures. In northern South Dakota and North Dakota, very limited snowmelt occurred in March, so with the approach of warmer temperatures at the end of March and beginning of April, snowmelt in the Big Sioux and the James River north of U.S. 212 will re-commence. SWE in the upper James River Basin ranges from 2.5-5 inches according to on the ground measurements, while in the Big Sioux north of Watertown, SWE ranges from 3-4 inches.

Climate Outlook

During the next five days temperatures in the Missouri Basin will be normal in southern portions of the basin; however colder temperatures will prevail in the Northern Plains with daily high temperatures expected to be 5-10 degrees Fahrenheit below normal. During the 6-10 day period, temperatures will continue to be below normal through the Northern Plains and Rockies, and normal in the lower basin. Through the remainder of April, temperatures will trend below normal (Figure 5).

In terms of precipitation, during the next five days, the Missouri Basin will receive light precipitation in the Central Plains; however, a powerful winter storm will produce heavy snow in the Northern Rockies and a mix of rain and snow in the Northern Plains. During the 6-10 day period, the Northern Plains could continue to receive precipitation while the southern half of the Missouri River Basin will likely be dry. Through the end of April, the wet conditions in the north and dry conditions in the south are expected to continue (Figure 6).

During the April-June period, temperatures are forecast to trend below normal from the Midwest to the Northern Rockies. Precipitation chances are forecast to be normal throughout the basin with the exception of above normal chances in North Dakota and northeast Montana. In relation to drought, normal (non-drought) hydrologic conditions are expected to prevail in the Dakotas, Wyoming, Montana and Iowa through June (Figure 7). Moderate to severe drought already affecting eastern Colorado and western Kansas are expected to persist, while abnormally dry conditions and moderate drought will continue to develop in southern Nebraska and central Kansas.

April 2011 Calendar Year Runoff Forecast

The overall calendar year 2011 runoff forecast is 29.5 MAF (130% of normal) above Gavins Point Dam, which is an increase of 3.95 MAF from the March 2011 forecast. This increase is due in part to actual March runoff being higher than forecasted March runoff, an increase in forecasted runoff into the Garrison reach, and an increase in the expected mountain snowmelt runoff due to increased mountain SWE. The summation above Sioux City is 34.6 MAF (139% of normal), an increase of 4.6 MAF.

Remaining plains snow pack (2.5-4.5 inches of SWE) in the Fort Peck to Garrison reach north of the Missouri River has not melted, and as a result Garrison is expected to receive up to 2.0 MAF of runoff in the month of April, which represents about 1.0 inch of snowmelt runoff from the contributing area covered with snow (35,000 square miles). The total March-April runoff forecast into Garrison is 3.5 MAF. Similar runoff volumes occurred in March and April of calendar years 1949 (2.9 MAF), 1960 (2.8 MAF), 1969 (3.4 MAF), and 1979 (4.5 MAF), which were all impacted by moderate to heavy plains snow in the Garrison reach.

Mountain snow accumulations as a percent of long-term averages are 116% of normal above Fort Peck and 112% of normal in the Fort Peck to Garrison reach. As a result, the May-July runoff above Fort Peck is expected to be 122% of normal, while the Fort Peck to Garrison reach is expected to receive 110% of normal runoff using snow to runoff regression equations. Runoff in all reaches above the System are forecasted to return to normal by August 2011, while above average runoff is forecasted in the Gavins to Sioux City reach due to persistently high streamflow conditions.

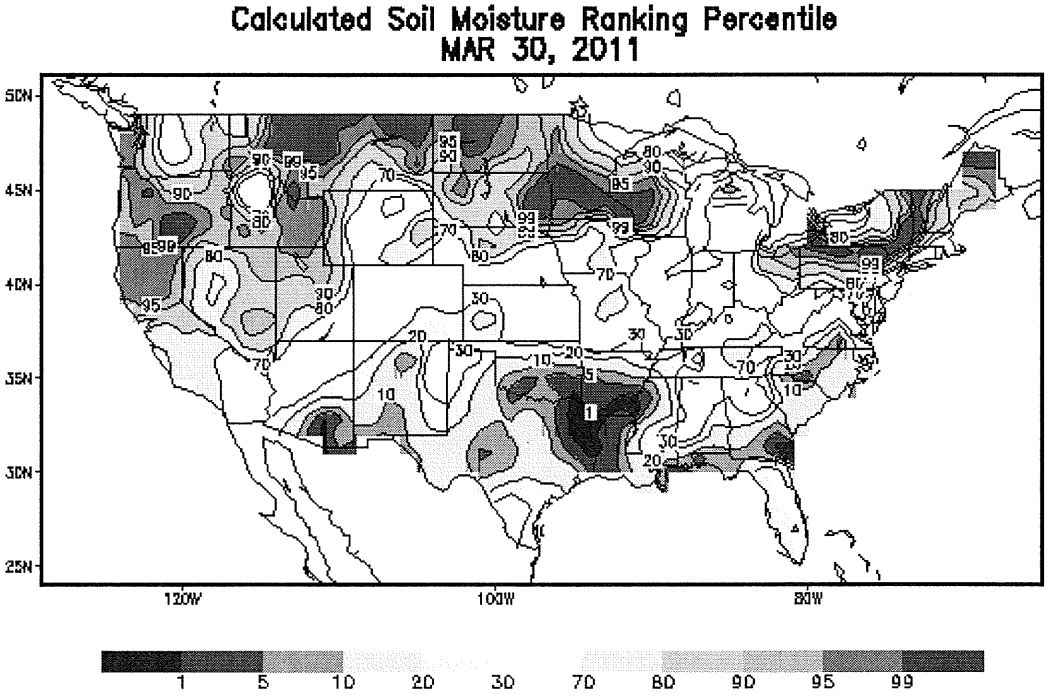


Figure 1 March 30, 2011 Soil Moisture Ranking Percentile.

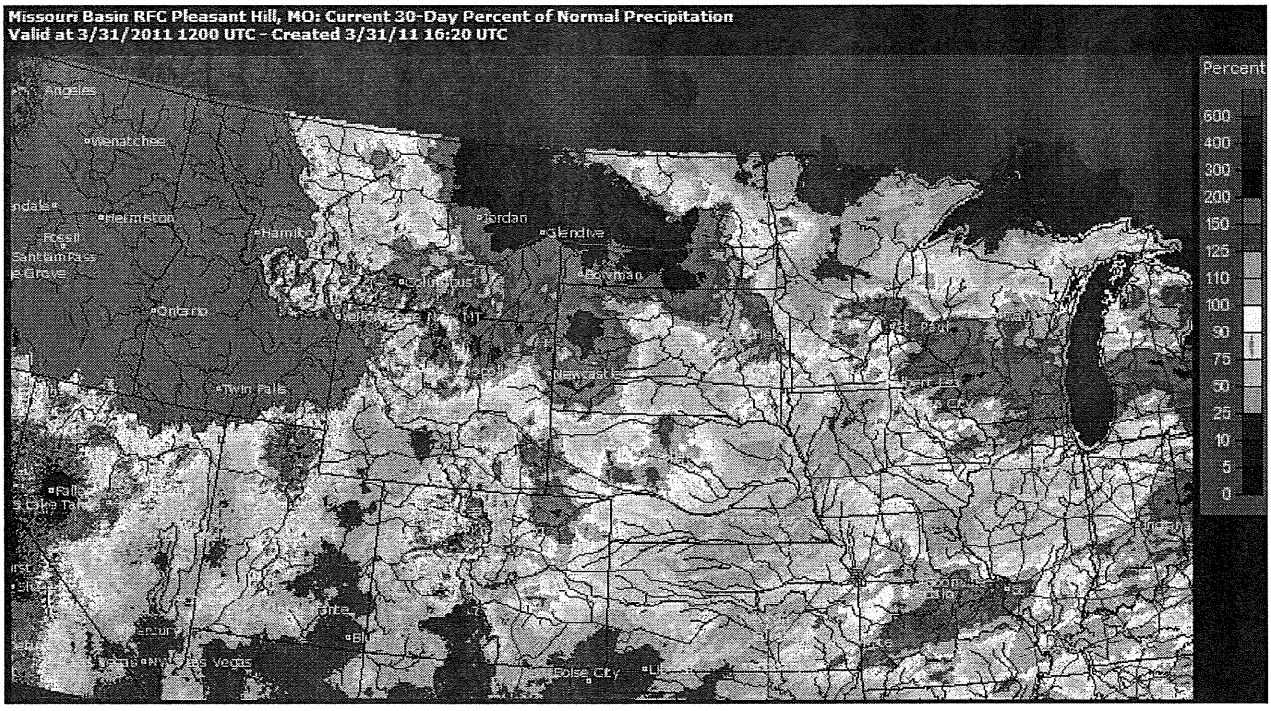


Figure 2 30-day precipitation as a percent of normal, ending March 31, 2011.

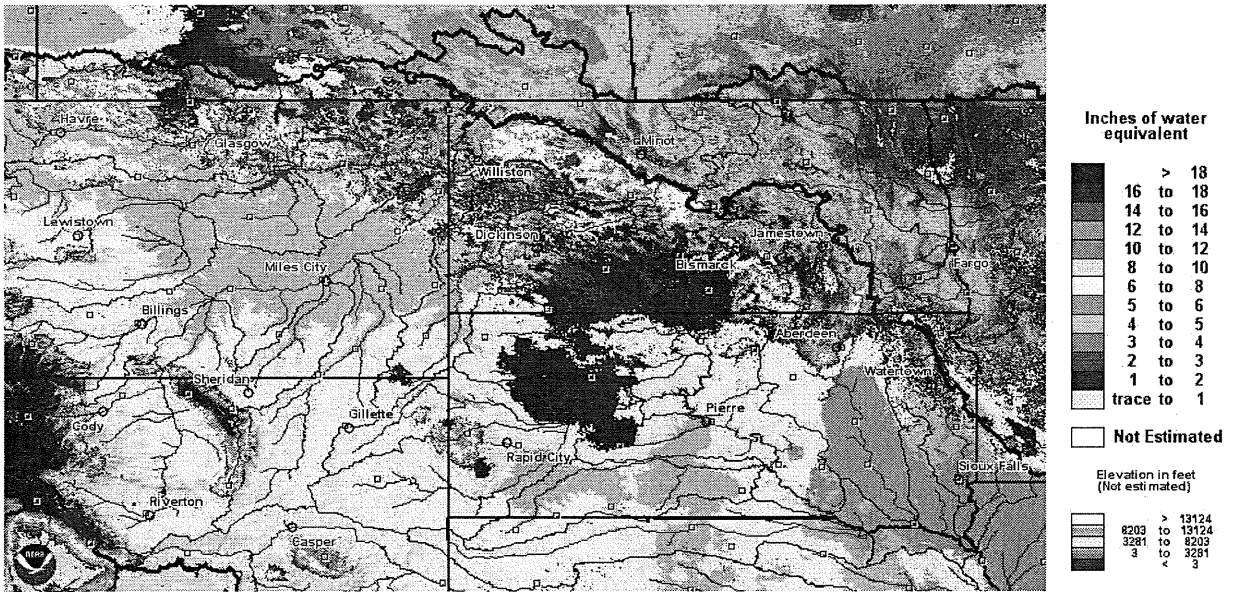


Figure 3 Plains Snow Water Equivalent on March 31, 2011.

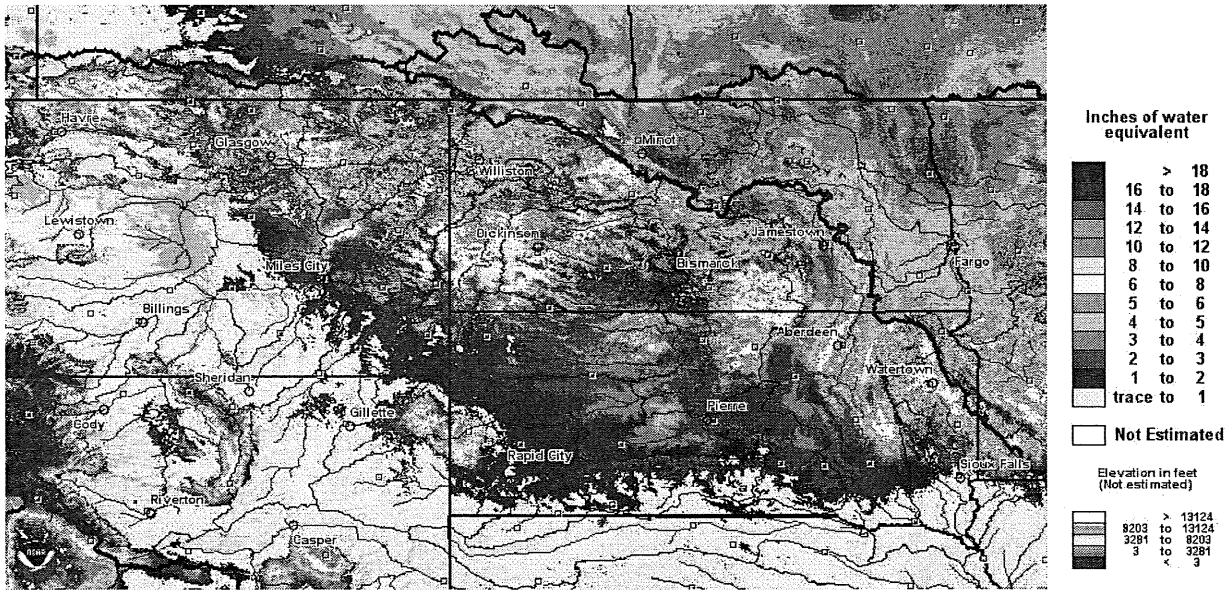


Figure 4 Plains Snow Water Equivalent on March 10, 2010.

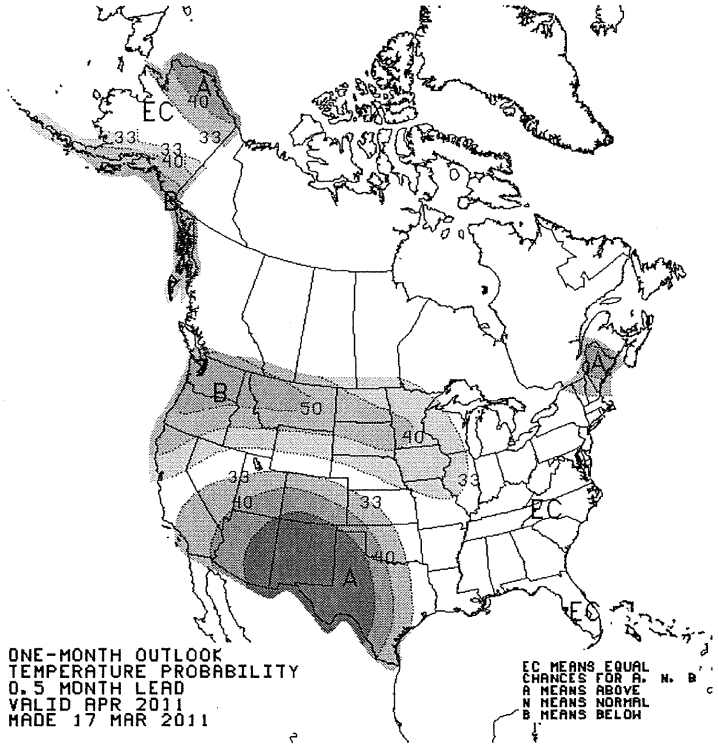


Figure 5 April 2011 temperature outlook.

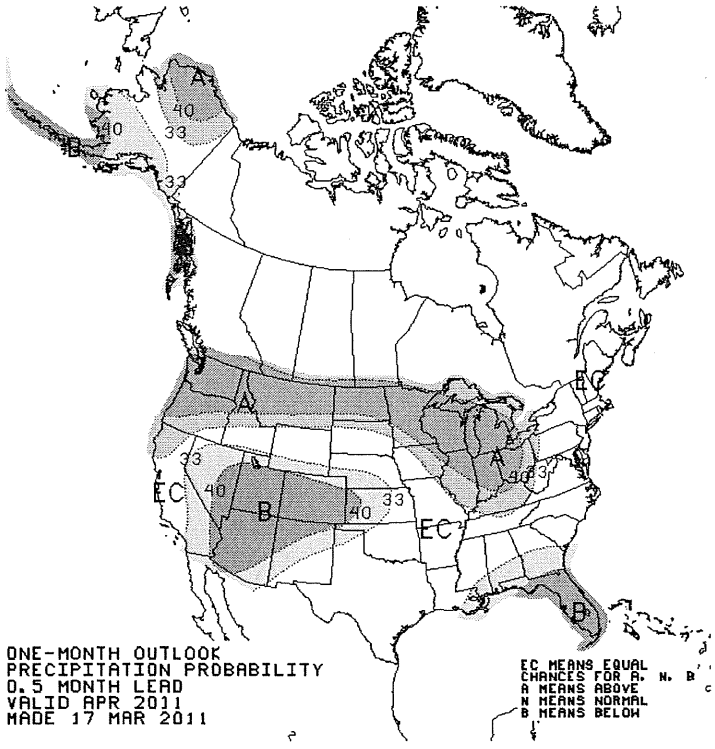


Figure 6 April 2011 precipitation outlook

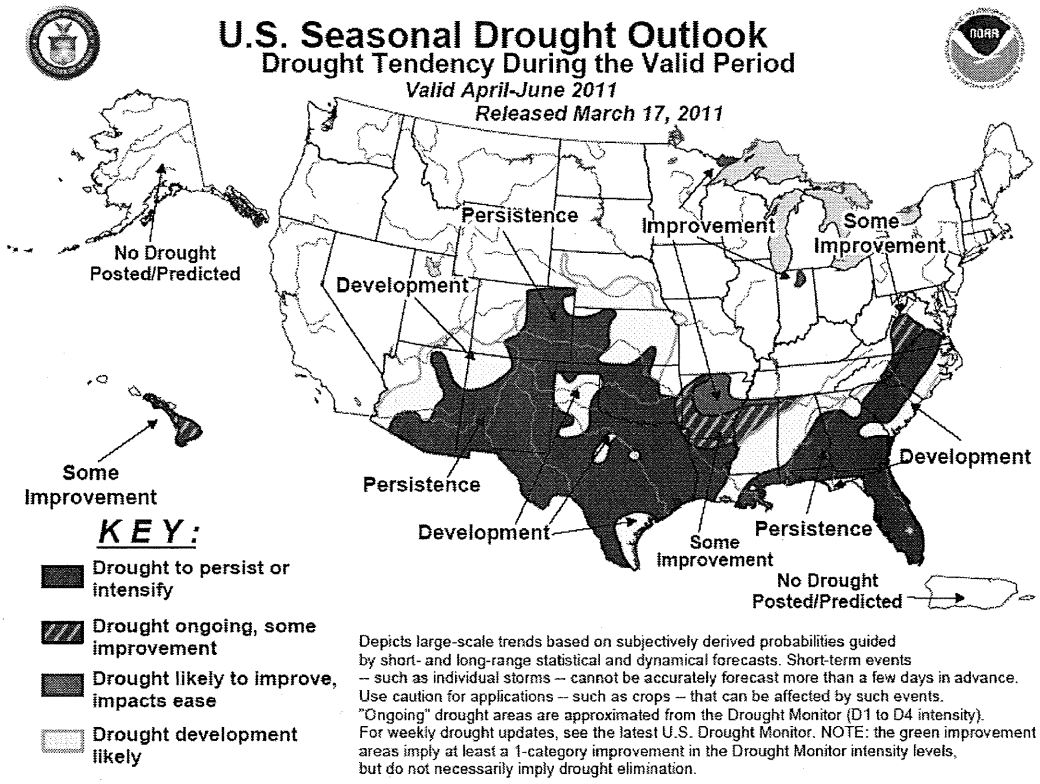


Figure 7 U.S. Drought Outlook through June 2011.

[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Monday, April 04, 2011 4:29 PM
To: [redacted] NWD
Cc: Anderson, G Witt NWD
Subject: No May Pulse? (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] (and Witt, if you're still monitoring email)-

Due to high system storage and above normal forecasted runoff, we are increasing our service level tomorrow by 10,000 cfs to start evacuating flood waters from the mainstem reservoir system. This means that all of the navigation targets are increased by 10,000 cfs, however the downstream flow limits for the spring pulse are not. And since our window of opportunity between the navigation target and the downstream flow limit was only 10,000 cfs at Omaha and Nebraska City, that window is now closed.

I just wanted to give you a heads up since, unless you object (or want to participate?), I plan on giving the FWS a call tomorrow to update them, and followed by an email to our spring pulse coordination list (Congressional staffers, state folks, etc). We would then plan on making the decision public in our regular monthly press release that will go out later this week.

If you have any questions or would like to discuss, give me a call anytime.

Jody

Office: 402-996-3840
Cell: 402-350-1417
Home: [redacted]

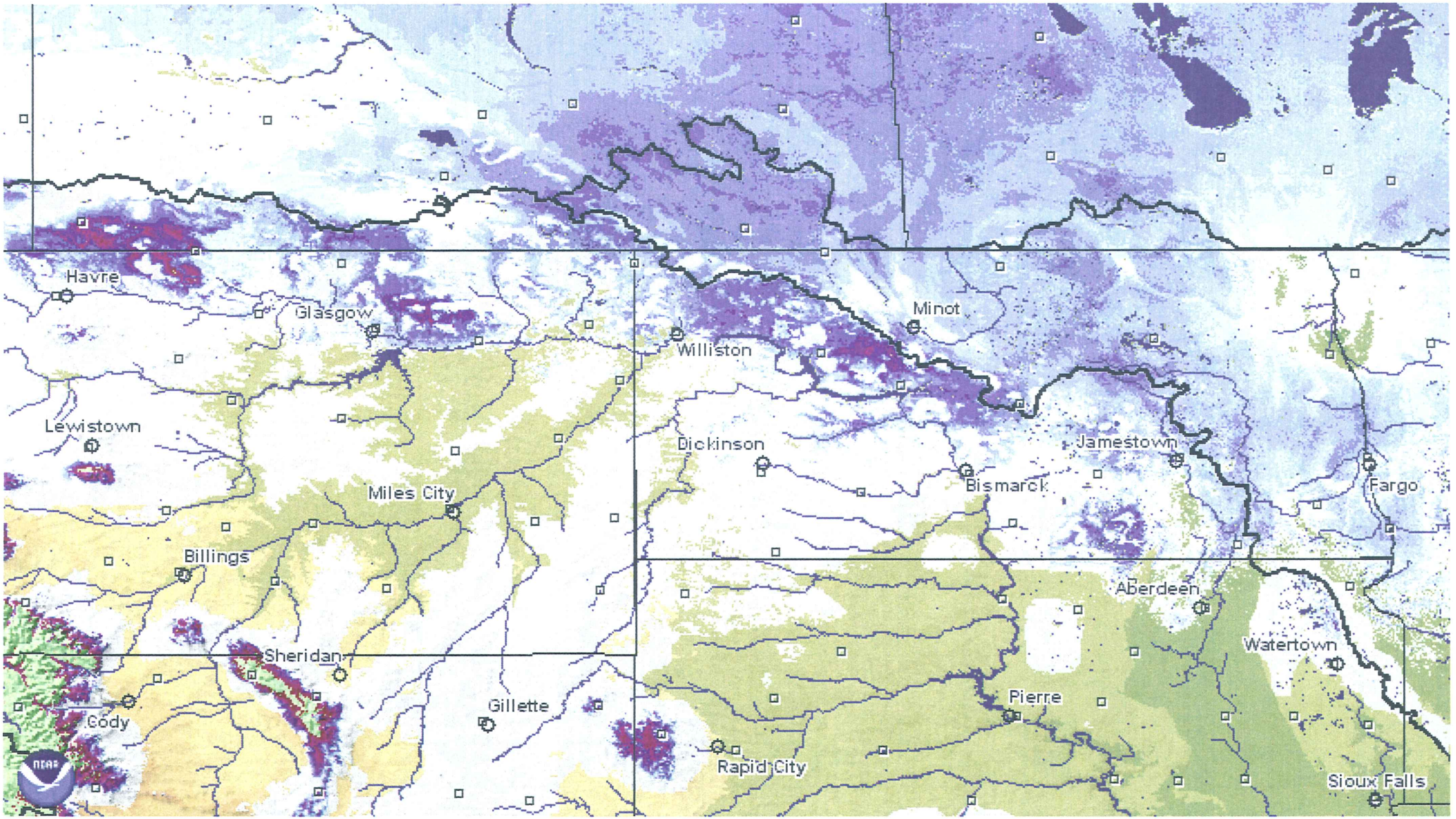
Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Monday, April 04, 2011 4:55 PM
To: Farhat, Jody S NWD02
Subject: Snow Water Equivalent (UNCLASSIFIED)
Attachments: swe_shallow.2011040415.1.800.450.304.1914.1268.3629.dem.shading.cefilm.m.0.0.0.0.0.0.png

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE


Havre
Glasgow
Minot
Williston
Lewistown
Dickinson
Jamestown
Bismarck
Fargo
Miles City
Billings
Aberdeen
Watertown
Sheridan
Gillette
Pierre
Cody
Rapid City
Sioux Falls

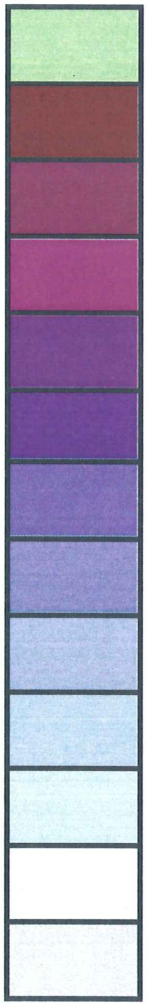
[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Monday, April 04, 2011 4:56 PM
To: Farhat, Jody S NWD02
Subject: Emailing: legend_swe_shallow_dem_152_402_0_0_0_0_0.png (UNCLASSIFIED)
Attachments: legend_swe_shallow_dem_152_402_0_0_0_0_0.png

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

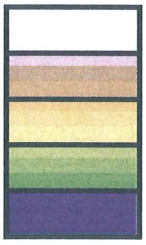
Inches of water equivalent



	>	18
16	to	18
14	to	16
12	to	14
10	to	12
8	to	10
6	to	8
5	to	6
4	to	5
3	to	4
2	to	3
1	to	2
trace	to	1

Not Estimated

Elevation in feet
(Not estimated)



	>	13124
8203	to	13124
3281	to	8203
3	to	3281
	<	3

[redacted] NWO

From: [redacted] NWO
Sent: Monday, April 04, 2011 4:25 PM
To: Farhat, Jody S NWD02
Subject: Forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Jody,
I have heard from both Ft. Peck and Oahe, since we had the forecast call this afternoon. We're all concerned about being in our exclusive flood control zones and the impacts that has to our operations, but what concerns me more is the feedback that I'm hearing; "it doesn't matter what we say, so we may as well keep our mouths shut"...

We are not hydrologists, but have a pretty good feel for the local conditions and have quite a bit of experience in dealing with the reservoirs. Comments like, "the snow pack above Oahe is gone" raise a concern for us when we know better. It might be a small percentage of the Oahe drainage basin, but it's not gone.

I guess that I'm concerned that the OPM's will not even bother to call in, or provide input, if they feel like they're not being heard? That we will not fostering improved working relationships, or improve our forecasts.

One thing that I'm wondering about is how we account for expected precipitation in the forecasts. Is there a better way than figuring "average"? It just seems to me that when we're in a drought cycle we over estimate the precip and when we're in a wet cycle we underestimate it. I know there's more to it, but continued adjusting of the forecasts up, or down, throughout a year create issues for managing our projects. I'm simply looking for ways to improve the process and do not want the relationships to go downhill.

My intent is NOT to tell you how to do your job, rather to ensure that we all continue to work on the same team...
[redacted]

Classification: UNCLASSIFIED
Caveats: FOUO

[redacted] NWO

From: [redacted] NWD02
Sent: Monday, April 04, 2011 3:14 PM
To: Farhat, Jody S NWD02; [redacted] NWD02; 'kinney@wapa.gov'; 'bcallies@wapa.gov'; [redacted] NWD02; [redacted] NWD02; [redacted] NWO; 'shimek@wapa.gov'
Subject: April 2011 Reservoir Regulation Studies Graphics and Statistics (UNCLASSIFIED)
Attachments: resfcastapr.pdf; WAPAMNTH-11-APR.xlsx; WAPA.MonthlyStudies.Graphic.APR.2011.pptx

Classification: UNCLASSIFIED
Caveats: NONE

Everyone,

Here are the April 2011 study graphics and statistics.

If you have any questions please contact me.

Thanks,

[redacted]
Hydraulic Engineer
Missouri River Basin Water Management Division
[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

APR 1, 2011 / BASIC CONDITION / 33.8 MAF / BALANCED
FULL SERV / NAV SEAS +10 DAYS / NO MAY PULSE
Elevations & Storages are for Date Shown
Avg Discharge & Energy are Monthly Values
Date of Study: April 1, 2011

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2239.7	2241.0	2243.9	2243.9	2242.0	2240.6	2239.3	2238.3	2236.8	2235.3	2234.0
DISCH KCFS	7.4	7.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	12.0	13.0	13.0
GARRISON --------												
ELEV FTMSL	1840.5	1843.7	1845.0	1848.0	1848.6	1846.6	1844.6	1842.2	1840.1	1839.7	1838.4	1837.5
DISCH KCFS	21.8	15.0	22.0	29.0	29.0	29.0	29.6	30.5	30.5	19.0	25.0	25.0
OAHE ------------												
ELEV FTMSL	1614.3	1616.0	1615.7	1615.7	1614.2	1612.1	1609.8	1609.1	1607.9	1606.7	1606.9	1607.5
DISCH KCFS	13.9	15.9	28.4	34.2	37.1	38.0	41.8	33.4	36.1	24.9	23.6	22.7
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	16.4	28.4	34.2	37.0	37.6	41.4	33.1	35.8	24.7	23.6	22.7
FORT RANDALL ----												
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.6	1339.4	1344.9	1350.1
DISCH KCFS	15.1	20.9	33.2	36.5	37.5	37.6	43.8	43.2	43.3	23.0	18.2	17.0
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	35.5	39.0	39.0	39.0	45.0	45.0	45.0	25.0	20.0	20.0
SYSTEM ----------												
STORAGE 1000 AF	61720	63480	63965	65694	65376	63533	61633	59661	57931	57180	56853	56834
ENERGY GWh	11089	607	994	1128	1211	1219	1241	1162	1135	819	821	752
PEAK POWER MW		2389	2397	2401	2394	2381	2370	2344	2293	2293	2314	2320

APR 1, 2011 / LOWER BASIC / 25.7 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAY 16.9 (CALC)

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2238.6	2238.0	2238.8	2237.7	2235.9	2234.9	2234.5	2233.9	2232.6	2230.9	2229.4
DISCH KCFS	7.4	7.0	11.0	9.0	9.0	9.0	7.5	6.0	6.3	9.0	11.0	11.0
GARRISON --------												
ELEV FTMSL	1840.5	1842.0	1842.4	1843.9	1843.4	1841.7	1840.5	1839.4	1838.6	1837.2	1835.2	1833.7
DISCH KCFS	21.8	15.0	19.5	22.0	22.0	22.0	19.3	16.5	16.5	19.0	24.0	24.0
OAHE ------------												
ELEV FTMSL	1614.3	1614.9	1613.6	1612.3	1609.9	1607.0	1604.5	1603.1	1602.3	1602.3	1602.8	1603.6
DISCH KCFS	13.9	18.6	28.9	31.6	33.7	33.6	30.8	22.1	19.5	17.9	21.1	20.4
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	19.1	28.9	31.6	33.6	33.2	30.3	21.7	19.1	17.6	21.1	20.4
FORT RANDALL ----												
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	22.4	32.7	32.9	33.7	33.0	32.5	31.7	26.5	15.9	15.7	14.5
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	33.9	34.3	34.3	34.0	33.5	33.1	28.2	17.0	17.0	17.0
SYSTEM ----------												
STORAGE 1000 AF	61720	62283	61714	61908	60676	58846	57374	55871	54809	54167	53719	53568
ENERGY GWh	9061	650	971	978	1040	1028	911	775	668	632	736	673
PEAK POWER MW		2369	2376	2377	2363	2332	2318	2296	2255	2256	2276	2282

APR 1, 2011 / UPPER BASIC / 43.0 MAF / BALANCED
FULL SERV / NAV SEAS +10 DAYS / NO MAY PULSE

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2241.2	2243.0	2248.7	2248.4	2245.5	2242.8	2240.1	2237.5	2236.3	2235.0	2234.0
DISCH KCFS	7.4	8.0	15.0	14.0	17.5	18.0	17.9	18.0	17.7	12.0	13.0	13.0
GARRISON --------												
ELEV FTMSL	1840.5	1842.7	1843.0	1848.8	1850.2	1848.0	1845.6	1843.0	1841.0	1840.4	1838.7	1837.5
DISCH KCFS	21.8	25.5	40.0	40.0	40.0	40.0	41.5	41.5	40.3	22.0	28.0	28.0
OAHE ------------												
ELEV FTMSL	1614.3	1616.8	1616.8	1617.5	1615.4	1613.1	1610.7	1609.6	1608.0	1606.8	1606.9	1607.5
DISCH KCFS	13.9	23.7	47.3	45.9	53.5	50.9	55.3	47.3	49.7	28.0	27.2	26.1
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	24.2	47.3	45.9	53.4	50.7	55.0	47.0	49.6	27.9	27.2	26.1
FORT RANDALL ----												
ELEV FTMSL	1357.7	1358.0	1362.0	1362.0	1360.0	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	27.6	44.6	49.8	57.3	57.7	57.7	57.3	57.3	26.3	21.9	20.6
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	32.0	48.0	54.0	59.5	59.5	59.5	59.5	59.5	29.0	24.0	24.0
SYSTEM ----------												
STORAGE 1000 AF	61720	63881	64728	68409	67867	65166	62765	60233	58036	57318	56888	56830
ENERGY GWh	13882	868	1462	1419	1561	1525	1510	1455	1391	917	927	848
PEAK POWER MW		2384	2350	2361	2369	2385	2373	2352	2291	2295	2314	2320

VALUES IN 1000 AF EXCEPT AS INDICATED

	31MAR11 INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
			2011											2012
--FORT PECK--														
NAT INFLOW	7149	668	1236	1851	938	353	333	385	192	90	102	329	312	360
DEPLETION	492	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-153	-118
EVAPORATION	483				30	94	117	101	45	21	24	51		
MOD INFLOW	6174	643	938	1326	674	248	291	326	187	88	100	410	465	478
RELEASE	7188	417	646	655	676	676	623	615	298	139	159	738	799	748
STOR CHANGE	-1014	226	292	671	-2	-429	-332	-289	-110	-51	-59	-328	-334	-270
STORAGE	15803	16029	16322	16993	16991	16562	16230	15941	15831	15780	15721	15393	15059	14789
ELEV FTMSL	2238.7	2239.7	2241.0	2243.9	2243.9	2242.0	2240.6	2239.3	2238.8	2238.6	2238.3	2236.8	2235.3	2234.0
DISCH KCFS	7.4	7.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	10.0	10.0	12.0	13.0	13.0
POWER														
AVE POWER MW		97	145	152	153	153	145	138	138	138	138	161	164	163
PEAK POW MW		166	167	169	169	168	167	166	166	166	165	164	163	162
ENERGY GWH	1176.6	69.8	107.8	109.7	114.0	113.6	104.4	103.0	49.7	23.2	26.5	120.1	121.8	113.2
--GARRISON--														
NAT INFLOW	10593	1535	1355	2916	1946	604	452	523	199	93	106	247	261	356
DEPLETION	980	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-87	-57
CHAN STOR	-55	4	-34	-5			5	5			0	-20	-10	
EVAPORATION	552				35	109	135	115	51	23	27	57		
REG INFLOW	16195	1958	1790	2801	1986	1064	1087	1053	567	265	303	1023	1138	1161
RELEASE	17131	893	1353	1726	1783	1783	1760	1875	907	423	484	1168	1537	1438
STOR CHANGE	-937	1066	437	1075	202	-719	-673	-823	-341	-159	-181	-145	-400	-277
STORAGE	19049	20115	20552	21627	21830	21110	20437	19615	19274	19115	18934	18789	18389	18112
ELEV FTMSL	1840.5	1843.7	1845.0	1848.0	1848.6	1846.6	1844.6	1842.2	1841.2	1840.7	1840.1	1839.7	1838.4	1837.5
DISCH KCFS	21.8	15.0	22.0	29.0	29.0	29.0	29.6	30.5	30.5	30.5	30.5	19.0	25.0	25.0
POWER														
AVE POWER MW		191	283	376	379	378	381	389	386	385	384	240	313	311
PEAK POW MW		499	500	502	502	501	499	488	481	480	478	476	471	468
ENERGY GWH	2649.4	137.6	210.3	270.5	282.2	281.1	274.6	289.1	138.8	64.6	73.7	178.2	232.6	216.2
--OAHE--														
NAT INFLOW	2106	650	400	460	185	65	111	66	34	16	18		12	90
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-25	-25			-2	-4		0	0	45	-24	
EVAPORATION	534				34	106	129	110	50	23	26	56		
REG INFLOW	18061	1519	1657	2015	1761	1626	1712	1837	890	416	475	1146	1507	1500
RELEASE	20317	944	1745	2033	2279	2335	2487	2056	986	493	670	1531	1450	1308
STOR CHANGE	-2256	575	-89	-18	-518	-708	-776	-219	-95	-77	-195	-385	57	192
STORAGE	21093	21668	21579	21561	21043	20335	19559	19340	19245	19168	18973	18588	18645	18837
ELEV FTMSL	1614.3	1616.0	1615.7	1615.7	1614.2	1612.1	1609.8	1609.1	1608.8	1608.6	1607.9	1606.7	1606.9	1607.5
DISCH KCFS	13.9	15.9	28.4	34.2	37.1	38.0	41.8	33.4	33.1	35.5	42.2	24.9	23.6	22.7
POWER														
AVE POWER MW		213	381	458	494	502	546	434	429	459	543	321	303	293
PEAK POW MW		752	751	750	743	732	720	716	715	713	710	704	705	708
ENERGY GWH	3228.9	153.5	283.8	329.7	367.9	373.4	393.0	323.2	154.6	77.1	104.3	238.7	225.6	204.0
--BIG BEND--														
EVAPORATION	103				6	20	25	22	10	5	5	11		
REG INFLOW	20214	944	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
RELEASE	20244	974	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	16.4	28.4	34.2	37.0	37.6	41.4	33.1	32.8	35.2	41.9	24.7	23.6	22.7
POWER														
AVE POWER MW		76	133	160	173	176	196	161	163	175	207	124	115	109
PEAK POW MW		495	509	509	509	509	517	538	538	538	538	538	538	528
ENERGY GWH	1170.6	54.4	98.8	115.1	128.7	131.0	141.0	120.0	58.7	29.4	39.8	92.0	85.9	75.8
--FORT RANDALL--														
NAT INFLOW	737	207	147	152	57	39	38	5	3	1	2	12	25	49
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117				8	25	31	25	9	4	4	10		
REG INFLOW	20788	1177	1883	2173	2304	2314	2462	2014	968	485	661	1521	1472	1354
RELEASE	21426	1242	2039	2173	2304	2313	2607	2656	1289	601	687	1414	1122	980
STOR CHANGE	-638	-65	-156	0	0	1	-145	-642	-320	-116	-27	107	350	374
STORAGE	3770	3705	3549	3549	3549	3550	3405	2764	2443	2327	2301	2408	2758	3132
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.1	1338.1	1337.6	1339.4	1344.9	1350.1
DISCH KCFS	15.1	20.9	33.2	36.5	37.5	37.6	43.8	43.2	43.3	43.3	43.3	23.0	18.2	17.0
POWER														
AVE POWER MW		180	281	306	314	315	341	323	301	288	283	168	138	136
PEAK POW MW		362	356	356	356	356	350	319	297	288	286	294	319	339
ENERGY GWH	2046.8	129.4	208.9	220.6	233.8	234.7	245.4	240.6	108.2	48.3	54.4	125.1	103.0	94.4
--GAVINS POINT--														
NAT INFLOW	1545	250	186	178	137	115	111	120	59	28	31	100	100	130
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-5	-11	-24	-6	-2	0	-12	1	0	0	0	38	9	2
EVAPORATION	36				2	6	9	8	3	2	2	4		
REG INFLOW	22815	1476	2183	2321	2398	2411	2703	2767	1339	625	714	1537	1230	1112
RELEASE	22827	1488	2183	2321	2398	2398	2678	2767	1339	625	714	1537	1230	1150
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	35.5	39.0	39.0	39.0	45.0	45.0	45.0	45.0	45.0	25.0	20.0	20.0
POWER														
AVE POWER MW		86	113	114	114	114	115	116	116	116	116	88	71	70
PEAK POW MW		114	114	114	114	115	116	116	116	116	116	117	117	114
ENERGY GWH	817.0	61.9	84.0	82.1	84.8	85.1	82.9	86.2	41.7	19.5	22.3	65.3	52.5	48.7
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	3196	1279	700	350	250	150	110	86	42	19	22	56	40	92
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	25771	2745	2847	2640	2609	2512	2764	2842	1374	641	733	1580	1256	1228
KCFS		46.1	46.3	44.4	42.4	40.9	46.4	46.2	46.2	46.2	46.2	25.7	20.4	21.4
--TOTAL--														
NAT INFLOW	25326	4589	4024	5907	3513	1326	1155	1185	528	246	282	744	750	1077
DEPLETION	2548	102	610	1502	1105	295	-163	-63	-149	-69	-79	-209	-204	-130
CHAN STOR	-68	18	-83	-36	-2	0	-9	2	0	0	-1	65	-25	2
EVAPORATION	1825				115	361	446	380	168	78	88	189		
STORAGE	61720	63480	63965	65694	65376	63533	61633	59661	58795	58392	57931	57180	56853	56834
SYSTEM POWER														
AVE POWER MW		842	1336	1566	1628	1638	1724	1562	1533	1560	1671	1101	1104	1081
PEAK POW MW		2389	2397	2401	2394	2381	2370	2344	2312	2301	2293	2293	2314	2320
ENERGY GWH	11089.3	606.6	993.7	1127.7	1211.3	1218.9	1241.3	1162.0	551.8	262.1	320.8	819.4	821.3	752.2
DAILY GWH		20.2	32.1	37.6	39.1	39.3	41.4	37.5	36.8	37.4	40.1	26.4	26.5	25.9

	31MAR11		2011										2012
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	4814	434	742	1111	563	282	266	308	154	72	82	263	250	288
DEPLETION	408	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION	568				35	110	137	119	54	25	28	61		
MOD INFLOW	3838	396	547	706	309	171	237	279	124	58	66	282	319	343
RELEASE	5786	417	676	536	553	553	446	369	179	83	111	553	676	633
STOR CHANGE	-1948	-21	-129	170	-245	-382	-209	-90	-55	-25	-45	-272	-357	-290
STORAGE	15803	15782	15653	15824	15579	15197	14988	14899	14844	14819	14774	14502	14145	13855
ELEV FTMSL	2238.7	2238.6	2238.0	2238.8	2237.7	2235.9	2234.9	2234.5	2234.3	2234.1	2233.9	2232.6	2230.9	2229.4
DISCH KCFS	7.4	7.0	11.0	9.0	9.0	9.0	7.5	6.0	6.0	6.0	7.0	9.0	11.0	11.0
POWER														
AVE POWER MW		97	150	124	124	124	103	82	82	82	95	122	146	145
PEAK POW MW		166	165	166	165	164	163	163	162	162	162	161	160	159
ENERGY GWH	952.7	69.7	111.6	89.5	92.4	92.0	73.9	61.1	29.5	13.8	18.3	91.0	108.8	101.2
--GARRISON--														
NAT INFLOW	7002	998	813	1750	1168	483	362	418	159	74	85	198	209	285
DEPLETION	901	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR	-36	4	-39	19			15	15			-10	-20	-20	
EVAPORATION	660				41	129	160	137	61	28	32	69		
REG INFLOW	11191	1397	1340	1781	1187	796	770	644	369	172	203	714	888	930
RELEASE	13274	893	1199	1309	1353	1353	1147	1015	491	229	262	1168	1476	1381
STOR CHANGE	-2083	505	140	472	-166	-557	-377	-370	-122	-57	-59	-454	-588	-451
STORAGE	19049	19554	19694	20166	20000	19444	19067	18696	18575	18518	18459	18005	17417	16966
ELEV FTMSL	1840.5	1842.0	1842.4	1843.9	1843.4	1841.7	1840.5	1839.4	1839.0	1838.8	1838.6	1837.2	1835.2	1833.7
DISCH KCFS	21.8	15.0	19.5	22.0	22.0	22.0	19.3	16.5	16.5	16.5	16.5	19.0	24.0	24.0
POWER														
AVE POWER MW		190	248	281	282	280	244	208	207	207	207	237	295	292
PEAK POW MW		485	491	499	498	483	479	475	474	473	472	467	460	454
ENERGY GWH	2020.0	137.0	184.5	202.2	209.5	208.3	175.6	155.1	74.7	34.8	39.7	176.1	219.5	203.1
--OAHE--														
NAT INFLOW	1380	423	240	276	111	52	89	53	27	13	14		10	72
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-16	-9			11	11				-10	-21	
EVAPORATION	620				41	124	150	127	57	26	30	65		
REG INFLOW	13393	1292	1352	1431	1250	1165	1069	962	460	215	246	1081	1447	1425
RELEASE	16824	1105	1776	1879	2072	2068	1835	1361	589	310	258	1099	1299	1172
STOR CHANGE	-3431	186	-425	-449	-822	-903	-766	-399	-128	-95	-13	-19	148	253
STORAGE	21093	21279	20854	20406	19584	18681	17915	17516	17388	17293	17280	17261	17409	17662
ELEV FTMSL	1614.3	1614.9	1613.6	1612.3	1609.9	1607.0	1604.5	1603.1	1602.7	1602.4	1602.3	1602.3	1602.8	1603.6
DISCH KCFS	13.9	18.6	28.9	31.6	33.7	33.6	30.8	22.1	19.8	22.3	16.3	17.9	21.1	20.4
POWER														
AVE POWER MW		249	385	418	441	435	393	280	249	280	205	225	266	257
PEAK POW MW		746	740	733	720	705	692	685	682	681	680	680	683	687
ENERGY GWH	2629.8	179.2	286.5	301.0	328.4	323.4	283.1	208.4	89.7	47.1	39.3	167.2	197.5	178.9
--BIG BEND--														
EVAPORATION	129				8	24	31	27	12	6	7	14		
REG INFLOW	16695	1105	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
RELEASE	16725	1135	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	19.1	28.9	31.6	33.6	33.2	30.3	21.7	19.4	21.9	15.9	17.6	21.1	20.4
POWER														
AVE POWER MW		88	135	148	157	156	144	106	97	110	80	89	104	98
PEAK POW MW		495	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	965.6	63.4	100.6	106.4	116.9	115.7	103.4	79.1	35.0	18.5	15.4	66.1	77.1	68.0
--FORT RANDALL--														
NAT INFLOW	487	135	88	91	34	31	30	4	3	1	1	10	20	39
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146				10	32	39	31	12	5	5	12		
REG INFLOW	16988	1266	1855	1958	2070	2028	1788	1306	565	300	248	1080	1316	1208
RELEASE	17637	1331	2011	1958	2070	2028	1934	1949	887	416	274	978	966	834
STOR CHANGE	-649	-65	-156		0	0	-146	-643	-322	-116	-26	102	350	374
STORAGE	3770	3705	3549	3549	3549	3549	3402	2759	2437	2321	2295	2397	2747	3121
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1337.9	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	22.4	32.7	32.9	33.7	33.0	32.5	31.7	29.8	30.0	17.3	15.9	15.7	14.5
POWER														
AVE POWER MW		193	277	277	283	277	271	254	225	219	126	117	119	115
PEAK POW MW		362	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1742.5	138.6	206.1	199.2	210.4	206.3	195.4	188.7	81.0	36.8	24.1	86.8	88.7	80.3
--GAVINS POINT--														
NAT INFLOW	1099	163	112	107	82	92	89	96	47	22	25	80	80	104
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	0	-14	-20	0	-1	1	1	1	3	0	24	3	0	2
EVAPORATION	45				3	8	11	10	4	2	2	5		
REG INFLOW	18577	1476	2084	2041	2109	2104	2018	2035	928	433	317	1045	1045	940
RELEASE	18589	1488	2084	2041	2109	2091	1993	2035	928	433	317	1045	1045	978
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.0	17.0	17.0	17.0
POWER														
AVE POWER MW		86	110	111	111	110	111	111	107	107	71	60	60	60
PEAK POW MW		114	114	114	114	115	117	117	117	117	117	117	117	114
ENERGY GWH	750.4	61.9	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	44.7	44.7	41.5
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	2104	831	420	210	150	120	87	69	33	15	18	45	32	74
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	20441	2297	2468	2220	2220	2175	2056	2093	955	446	332	1077	1063	1038
KCFS		38.6	40.1	37.3	36.1	35.4	34.6	34.0	32.1	32.1	20.9	17.5	17.3	18.0
--TOTAL--														
NAT INFLOW	16886	2984	2415	3545	2108	1060	923	948	422	197	225	596	601	862
DEPLETION	2385	139	441	1141	981	289	-161	-66	-104	-49	-55	-94	-55	-22
CHAN STOR	-46	15	-75	10	-1	1	26	28	3	0	14	-28	-41	2
EVAPORATION	2167				138	427	527	451	200	92	105	227		
STORAGE	61720	62283	61714	61908	60676	58846	57374	55871	55245	54952	54809	54167	53719	53568
SYSTEM POWER														
AVE POWER MW		903	1305	1358	1398	1382	1266	1041	968	1005	783	849	990	967
PEAK POW MW		2369	2376	2377	2363	2332	2318	2296	2269	2258	2255	2256	2276	2282
ENERGY GWH	9061.0	649.8	970.9	977.8	1039.8	1027.9	911.2	774.8	348.3	168.8	150.4	631.9	736.4	673.0
DAILY GWH		21.7	31.3	32.6	33.5	33.2	30.4	25.0	23.2	24.1	18.8	20.4	23.8	23.2
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

31MAR11		2011									2012	
INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--													
NAT INFLOW 9496	1022	1592	2726	1208	424	400	462	231	108	123	395	374	432
DEPLETION 240	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105
EVAPORATION 338				23	73	91	77	18	8	9	38		
MOD INFLOW 8918	1045	1332	2213	981	413	438	474	243	113	130	480	520	537
RELEASE 9929	476	922	833	1076	1107	1068	1107	536	250	270	738	799	748
STOR CHANGE -1011	569	410	1380	-95	-694	-629	-633	-293	-137	-140	-258	-279	-211
STORAGE 15803	16372	16782	18162	18066	17372	16743	16110	15817	15681	15540	15282	15003	14792
ELEV FTMSL 2238.7	2241.2	2243.0	2248.7	2248.4	2245.5	2242.8	2240.1	2238.8	2238.1	2237.5	2236.3	2235.0	2234.0
DISCH KCFS 7.4	8.0	15.0	14.0	17.5	18.0	17.9	18.0	18.0	18.0	17.0	12.0	13.0	13.0
POWER													
AVE POWER MW	111	168	171	172	171	169	167	166	165	165	161	163	163
PEAK POW MW	168	169	173	172	170	168	166	165	165	164	164	163	162
ENERGY GWH 1302.7	79.9	124.9	122.9	128.2	127.3	121.8	124.3	59.6	27.7	31.6	119.7	121.5	113.1
--GARRISON--													
NAT INFLOW 13940	1793	1792	4384	2562	725	542	628	239	112	127	296	313	427
DEPLETION 988	18	100	802	621	93	-133		-118	-55	-63	-117	-96	-64
CHAN STOR -53	-6	-68	10	-33	-5	1	-1			10	49	-10	
EVAPORATION 385				27	84	103	87	20	9	11	44		
REG INFLOW 22443	2245	2547	4425	2958	1650	1640	1647	872	407	459	1156	1199	1239
RELEASE 23378	1517	2460	2380	2460	2460	2467	2552	1235	576	587	1353	1722	1611
STOR CHANGE -935	728	87	2045	498	-809	-827	-905	-362	-169	-128	-197	-523	-372
STORAGE 19049	19777	19864	21908	22406	21597	20770	19865	19503	19334	19206	19009	18486	18114
ELEV FTMSL 1840.5	1842.7	1843.0	1848.8	1850.2	1848.0	1845.6	1843.0	1841.9	1841.4	1841.0	1840.4	1838.7	1837.5
DISCH KCFS 21.8	25.5	40.0	40.0	40.0	40.0	41.5	41.5	41.5	41.5	37.0	22.0	28.0	28.0
POWER													
AVE POWER MW	323	489	500	503	503	501	499	491	483	454	278	351	348
PEAK POW MW	495	498	503	504	502	500	498	484	482	481	479	473	468
ENERGY GWH 3491.0	232.3	363.5	360.2	374.3	374.1	360.7	371.2	176.6	81.1	87.1	206.9	261.0	242.0
--OAHE--													
NAT INFLOW 2907	837	560	752	266	78	133	79	40	19	21		14	108
DEPLETION 632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR -18	-14	-52				-5	0			18	59	-24	
EVAPORATION 373				26	81	99	84	20	9	10	42		
REG INFLOW 25263	2292	2897	2987	2526	2340	2468	2556	1254	585	615	1358	1694	1691
RELEASE 27517	1409	2906	2731	3288	3129	3291	2908	1390	682	887	1722	1672	1502
STOR CHANGE -2255	883	-9	256	-762	-789	-823	-352	-136	-97	-272	-365	22	189
STORAGE 21093	21976	21967	22223	21461	20672	19849	19497	19361	19264	18992	18628	18650	18838
ELEV FTMSL 1614.3	1616.8	1616.8	1617.5	1615.4	1613.1	1610.7	1609.6	1609.2	1608.9	1608.0	1606.8	1606.9	1607.5
DISCH KCFS 13.9	23.7	47.3	45.9	53.5	50.9	55.3	47.3	46.7	49.1	55.9	28.0	27.2	26.1
POWER													
AVE POWER MW	318	633	617	703	665	702	612	604	628	693	361	349	336
PEAK POW MW	756	756	760	749	737	725	719	717	715	711	704	705	708
ENERGY GWH 4342.0	229.1	471.2	444.5	523.0	495.1	505.6	455.5	217.3	105.5	133.1	268.4	259.8	234.0
--BIG BEND--													
EVAPORATION 71				5	15	19	16	4	2	2	9		
REG INFLOW 27447	1409	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
RELEASE 27477	1439	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
STORAGE 1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL 1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS 17.2	24.2	47.3	45.9	53.4	50.7	55.0	47.0	46.6	49.0	55.8	27.9	27.2	26.1
POWER													
AVE POWER MW	110	202	196	236	237	260	228	230	241	274	139	133	125
PEAK POW MW	486	440	440	464	509	517	538	538	538	538	538	538	529
ENERGY GWH 1544.3	79.5	150.2	141.2	175.6	176.1	187.0	169.4	82.7	40.6	52.5	103.6	98.9	87.0
--FORT RANDALL--													
NAT INFLOW 968	230	206	243	80	47	46	6	4	2	2	14	30	59
DEPLETION 77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION 82				6	19	24	18	4	2	2	7		
REG INFLOW 28288	1665	3103	2962	3339	3127	3288	2878	1385	680	884	1721	1699	1558
RELEASE 28936	1642	2743	2962	3521	3549	3434	3522	1706	796	910	1619	1349	1184
STOR CHANGE -648	23	360		-182	-422	-146	-643	-321	-116	-26	102	350	374
STORAGE 3770	3793	4153	4153	3971	3549	3403	2759	2438	2322	2296	2398	2748	3122
ELEV FTMSL 1357.7	1358.0	1362.0	1362.0	1360.0	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS 15.1	27.6	44.6	49.8	57.3	57.7	57.7	57.3	57.3	57.3	57.3	26.3	21.9	20.6
POWER													
AVE POWER MW	238	361	375	374	362	352	335	305	289	284	192	166	163
PEAK POW MW	365	375	375	370	354	349	317	294	285	283	293	319	339
ENERGY GWH 2352.3	171.1	268.6	270.0	278.1	269.7	253.1	249.0	110.0	48.6	54.5	142.8	123.3	113.6
--GAVINS POINT--													
NAT INFLOW 1969	279	260	285	192	138	133	144	71	33	38	120	120	156
DEPLETION 115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR -13	-24	-33	-10	-14	-1	0	1	0	0	0	57	8	2
EVAPORATION 24				2	5	6	6	1	1	1	3		
REG INFLOW 30753	1892	2951	3213	3659	3672	3566	3659	1770	826	944	1783	1476	1343
RELEASE 30765	1904	2951	3213	3659	3659	3541	3659	1770	826	944	1783	1476	1381
STOR CHANGE -12	-12				13	25							-38
STORAGE 354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL 1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS 21.0	32.0	48.0	54.0	59.5	59.5	59.5	59.5	59.5	59.5	59.5	29.0	24.0	24.0
POWER													
AVE POWER MW	106	112	111	110	111	113	115	115	115	115	101	84	83
PEAK POW MW	114	112	111	110	112	115	115	115	115	115	117	117	114
ENERGY GWH 849.3	76.3	83.5	79.9	81.7	82.4	81.6	85.2	41.2	19.2	22.0	75.3	62.7	58.1
--GAVINS POINT - SIOUX CITY--													
NAT INFLOW 4014	1524	840	560	350	180	132	103	50	23	27	67	48	110
DEPLETION 252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY													
KAF 34527	3406	3755	3742	3970	3803	3649	3751	1814	847	968	1837	1510	1477
KCFS	57.2	61.1	62.9	64.6	61.8	61.3	61.0	61.0	61.0	61.0	29.9	24.6	25.7
--TOTAL--													
NAT INFLOW 33294	5685	5250	8950	4658	1592	1386	1422	634	296	338	892	899	1292
DEPLETION 2304	75	495	1527	1094	208	-208	-85	-135	-63	-72	-202	-206	-124
CHAN STOR -81	-43	-152	0	-47	-6	-5	0	0	0	27	168	-26	2
EVAPORATION 1272				89	277	341	289	67	31	35	143		
STORAGE 61720	63881	64728	68409	67867	65166	62765	60233	59120	58601	58036	57318	56888	56830
SYSTEM POWER													
AVE POWER MW	1206	1965	1971	2098	2049	2097	1955	1910	1921	1984	1232	1246	1218
PEAK POW MW	2384	2350	2361	2369	2385	2373	2352	2312	2299	2291	2295	2314	2320
ENERGY GWH 13881.6	868.2	1461.9	1418.8	1561.1	1524.7	1509.8	1454.7	687.5	322.7	380.9	916.6	927.3	847.7
DAILY GWH	28.9	47.2	47.3	50.4	49.2	50.3	46.9	45.8	46.1	47.6	29.6	29.9	29.2

Gavins Point Dam Release

(million acre-feet)

	MAX 67-10	MIN 67-10	MEAN 67-10	LAST YEAR	Jan-11 FCST	Jan-11 LD fcst	Jan-11 UD fcst	Feb-11 FCST	Feb-11 LD fcst	Feb-11 UD fcst		Mar-11 FCST	Mar-11 LD fcst	Mar-11 UD fcst		Apr-11 FCST	Apr-11 LD fcst	Apr-11 UD fcst	
JAN	1.553	0.702	1.051	0.978	1.138	1.045	1.291	1.139	1.139	1.139	*	1.139	1.139	1.139	*	1.139	1.139	1.139	* JAN
FEB	1.685	0.549	0.966	0.834	1.111	0.994	1.277	1.166	0.944	1.333		1.147	1.147	1.147	*	1.147	1.147	1.147	* FEB
MAR	2.191	0.623	1.206	0.922	1.389	1.313	1.389	1.389	1.313	1.389		1.433	1.488	1.433		1.291	1.291	1.291	* MAR
APR	2.993	0.605	1.477	0.912	1.598	1.773	1.904	1.589	1.773	1.904		1.589	1.773	1.904		1.488	1.488	1.904	APR
MAY	3.664	0.651	1.730	1.550	1.888	2.084	2.890	1.888	2.084	2.890		1.888	2.085	2.829		2.183	2.084	2.951	MAY
JUN	3.569	0.715	1.771	1.649	1.880	2.041	3.094	1.880	2.041	3.094		1.880	2.041	3.094		2.321	2.041	3.213	JUN
JUL	3.782	0.495	1.983	2.152	1.943	2.109	3.443	1.943	2.109	3.474		1.943	2.109	3.443		2.398	2.109	3.659	JUL
AUG	3.959	0.661	2.129	2.581	2.041	2.091	3.443	2.041	2.091	3.474		2.041	2.091	3.443		2.398	2.091	3.659	AUG
SEP	3.894	1.102	2.112	2.805	2.083	1.993	3.332	2.112	1.993	3.362		2.142	1.993	3.332		2.678	1.993	3.541	SEP
OCT	4.197	0.760	2.106	3.000	2.152	2.035	3.443	2.183	2.035	3.474		2.214	2.035	3.443		2.267	2.035	3.659	OCT
NOV	4.165	0.448	1.834	2.749	2.082	1.674	3.333	2.112	1.674	3.362		2.142	1.678	3.333		2.678	1.678	3.540	NOV
DEC	2.287	0.759	1.154	1.549	1.383	0.769	1.722	1.383	0.769	1.722		1.353	0.769	1.722		1.537	1.045	1.783	DEC
TOTAL		8.070		21.681	20.69	19.92	30.56	20.83	19.97	30.62		20.91	20.35	30.26		23.53	20.14	31.49	TOTAL
JAN 12					1.230	0.769	1.476	1.230	0.769	1.476		1.230	0.769	1.476		1.230	1.045	1.476	JAN 12
FEB 12					1.150	0.719	1.343	1.150	0.719	1.381		1.150	0.719	1.381		1.150	0.978	1.381	FEB 12

* Actual

* Actual ** New Minimum

MAINSTEM ENERGY

(GWh)

	MAX 67-10	MEAN 67-10	MIN 67-10	AVG 100-YR	LAST YEAR	Jan-11 FCST	Feb-11 FCST	Mar-11 FCST	Apr-11 FCST	
JAN	915	710	425	729	558	729	745 *	745 *	745 *	JAN
FEB	912	622	307	637	442	700	726	655 *	655 *	FEB
MAR	1,040	637	308	554	352	692	691	710	630 *	MAR
APR	1,252	681	251	711	384	751	751	787	607	APR
MAY	1,344	779	285	928	664	962	953	944	994	MAY
JUN	1,386	834	286	912	626	988	980	971	1128	JUN
JUL	1,484	944	289	1,023	816	1070	1062	1052	1211	JUL
AUG	1,520	1,000	365	1,053	970	1114	1106	1096	1219	AUG
SEP	1,464	891	393	973	1094	999	1006	1013	1241	SEP
OCT	1,492	810	310	928	1081	826	837	852	1162	OCT
NOV	1,425	734	244	857	1001	820	830	844	1135	NOV
DEC	1,035	694	419	722	738	759	754	748	819	DEC
TOTAL		9,336		10,027	8,726	10,410	10,441	10,417	11,546	TOTAL
JAN 12						816	811	816	821	JAN 12
FEB 12						746	742	745	752	FEB 12

* Actual

** New Minimum

MAINSTEM ENERGY

(GWh)

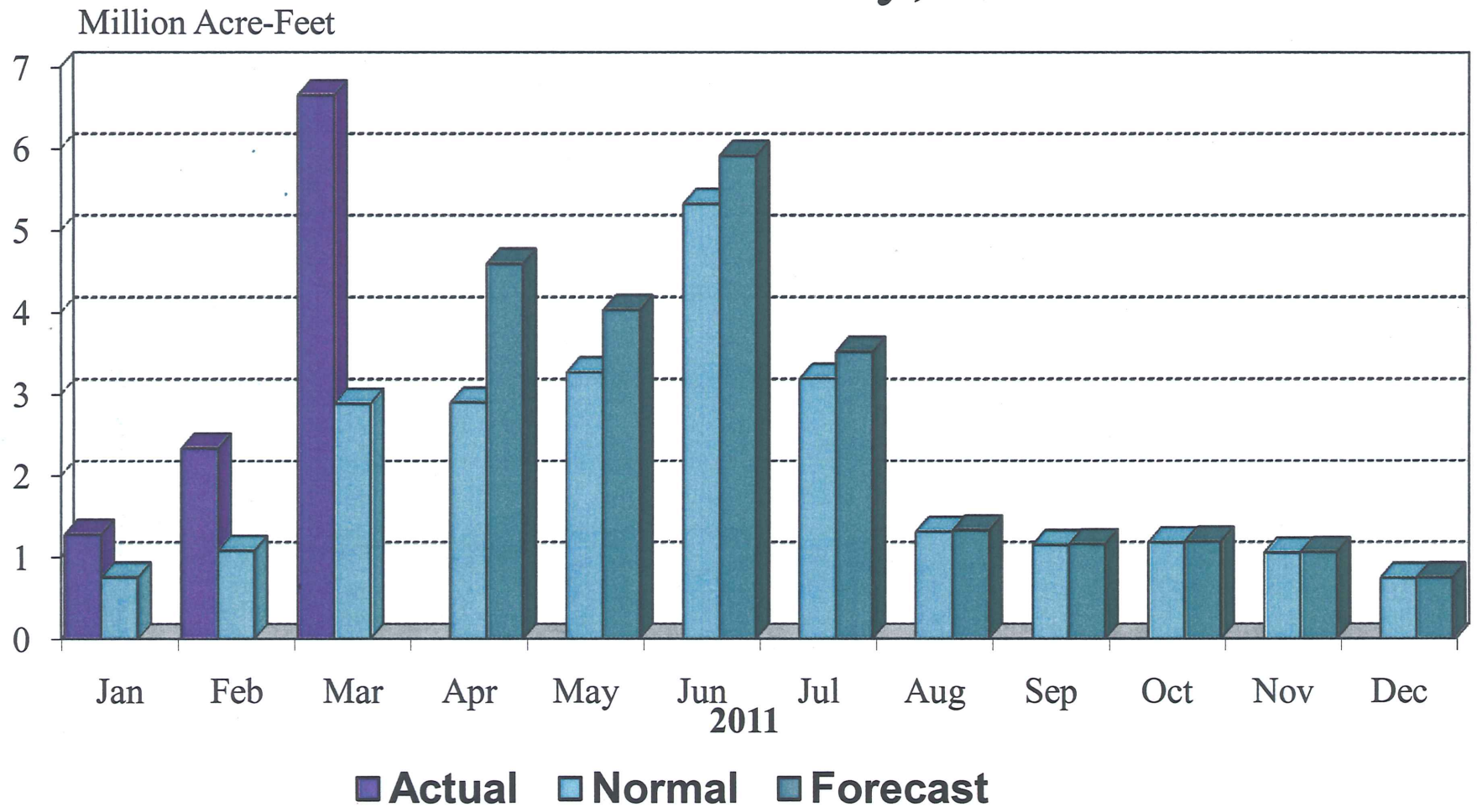
	Lower Basic FCST Jan-11	Upper Basic FCST Jan-11	Lower Basic FCST Feb-11	Upper Basic FCST Feb-11	Lower Basic FCST Mar-11	Upper Basic FCST Mar-11	Lower Basic FCST Apr-11	Upper Basic FCST Apr-11	
JAN	699	775	745 *	745 *	745 *	745 *	745 *	745 *	JAN
FEB	642	748	646	777	655 *	655 *	655 *	655 *	FEB
MAR	694	666	694	665	775	666	630 *	630 *	MAR
APR	807	871	794	871	835	909	650	868	APR
MAY	988	1369	989	1373	990	1351	971	1462	MAY
JUN	988	1386	990	1388	986	1390	978	1419	JUN
JUL	1049	1542	1050	1551	1046	1547	1040	1561	JUL
AUG	1036	1549	1038	1557	1034	1553	1028	1525	AUG
SEP	904	1465	905	1472	904	1468	911	1510	SEP
OCT	756	1407	757	1414	757	1404	775	1455	OCT
NOV	649	1354	650	1361	649	1349	668	1391	NOV
DEC	533	885	534	885	534	885	632	917	DEC
TOTAL	9745	14017	9,792	14,059	9,910	13,922	9,683	14,138	TOTAL
JAN 12	632	942	629	942	628	942	736	927	JAN 12
FEB 12	575	861	572	861	572	861	673	848	FEB 12

* Actual

* Actual ** New Minimum

CY 2011 Missouri River Runoff

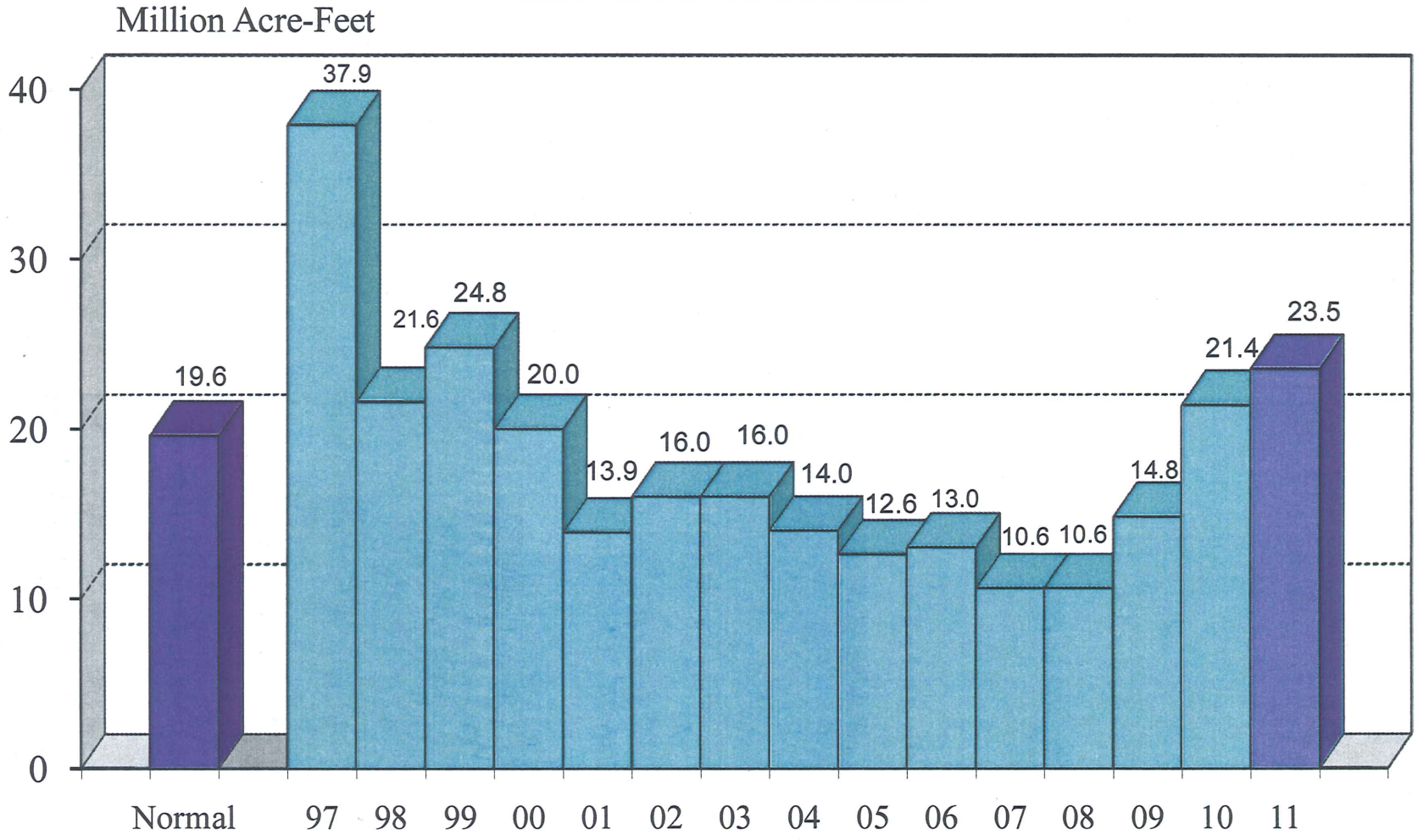
Above Sioux City, Iowa



Apr 1, 2011 Forecast – 33.8 MAF - 136%
Normal: 24.8 MAF

Gavins Point

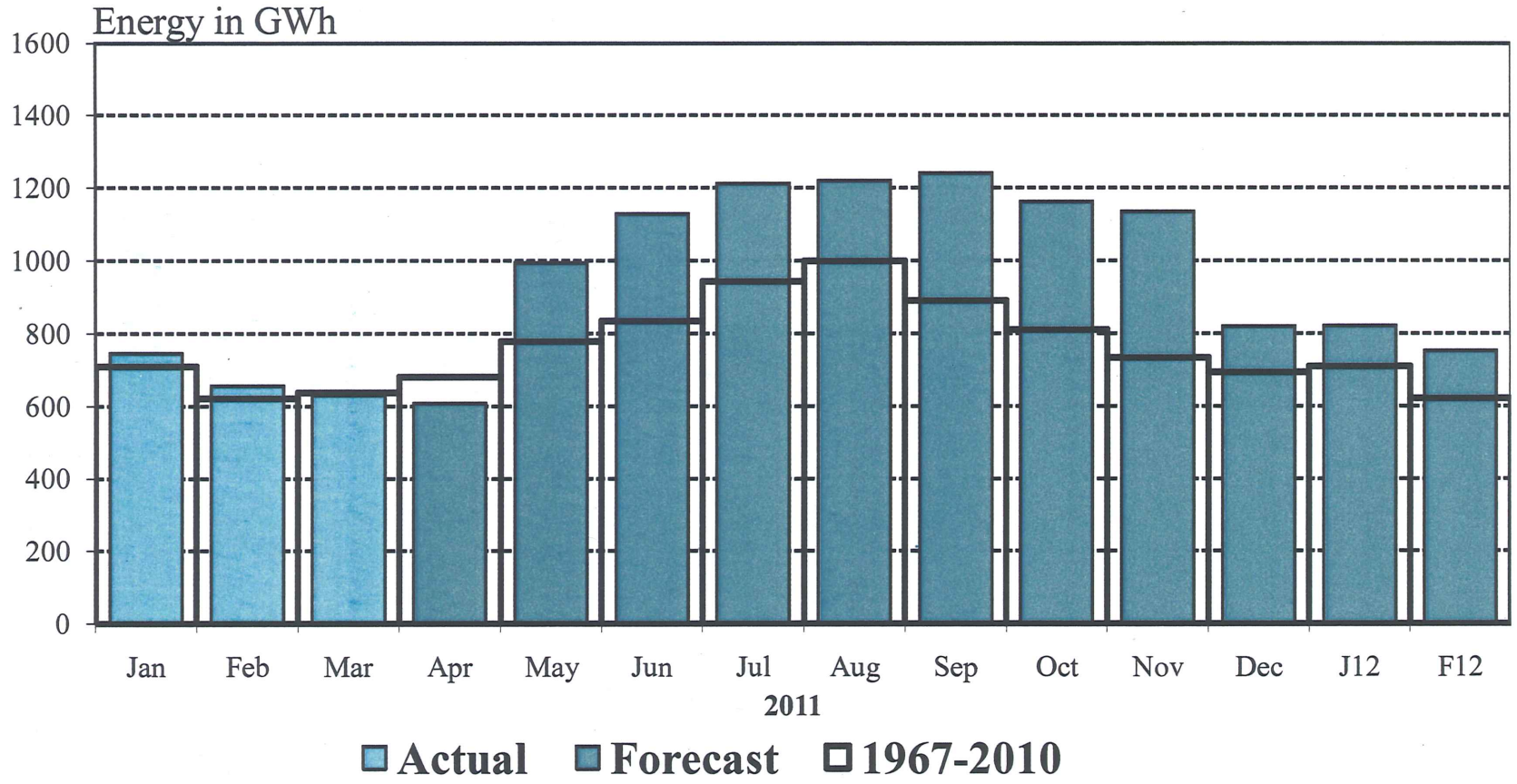
Annual Release



Apr 1, 2011 Forecast Upper Basic: 31.5 MAF Lower Basic: 20.1 MAF

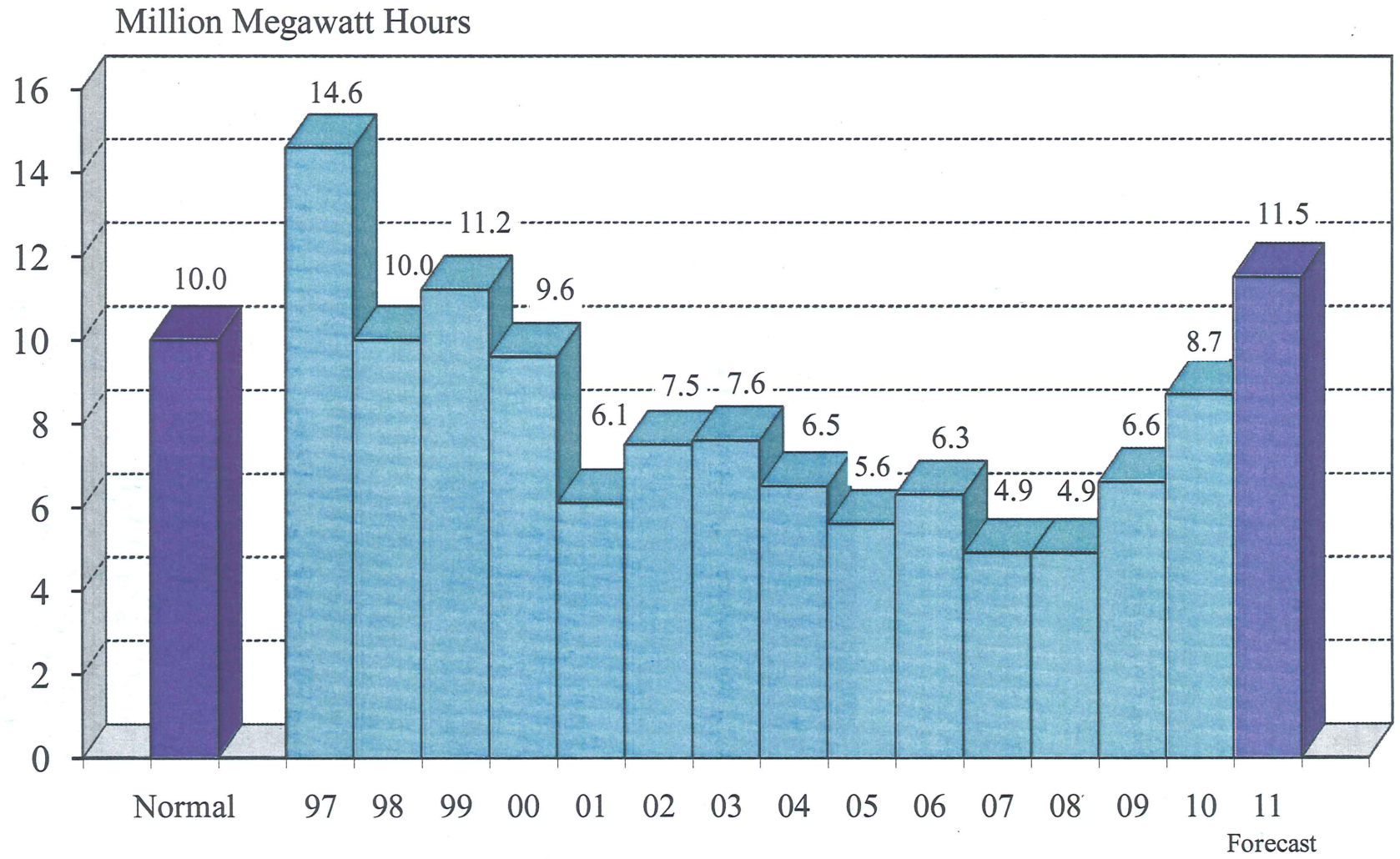
Missouri River Mainstem System

Forecasted Energy Generation



Upper Basic: 14,140 GWh
Basic: 11,550 GWh
Lower Basic: 9,680 GWh

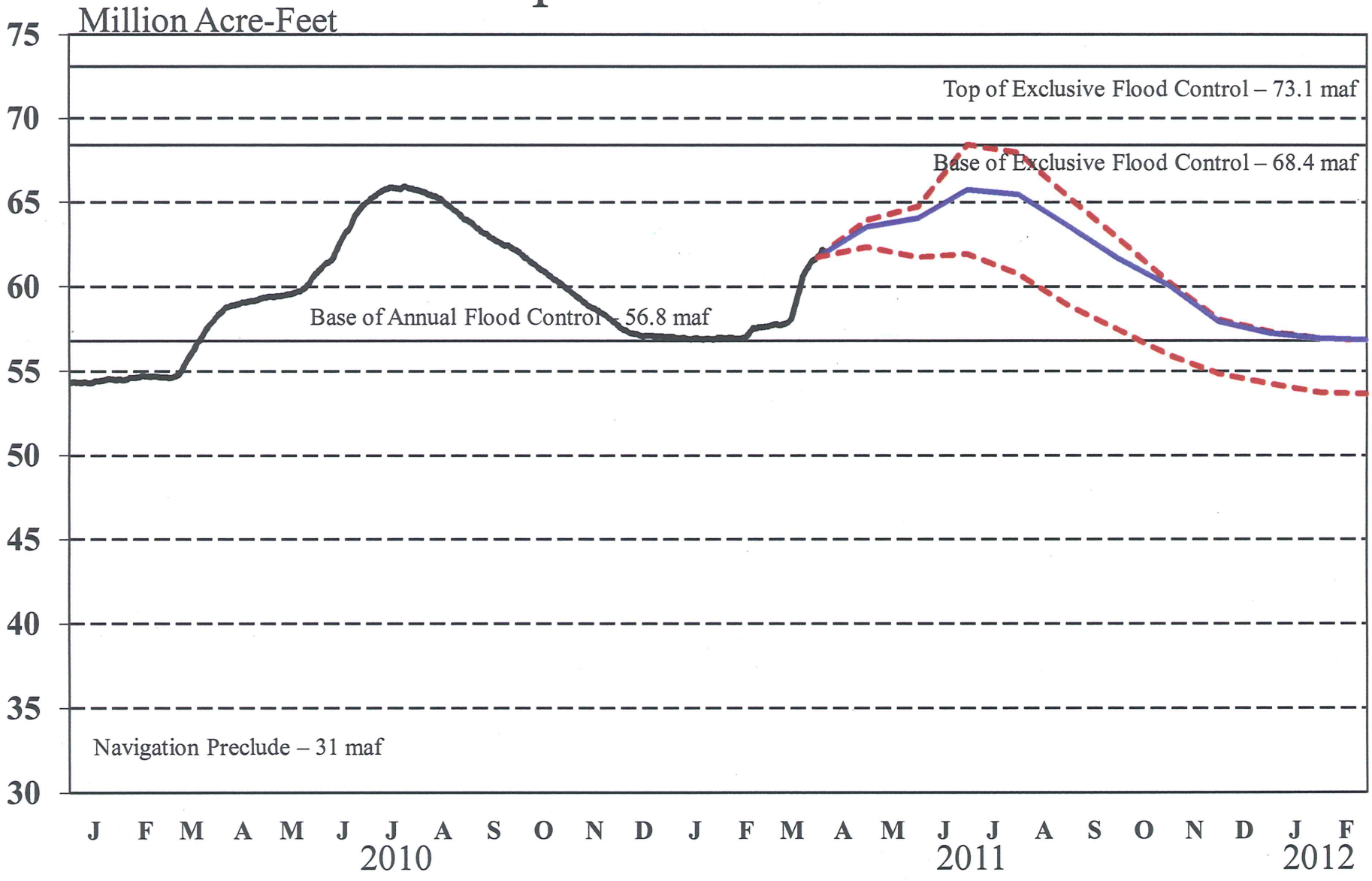
Mainstem System Generation



Apr 1, 2011 Forecast Upper Basic: 14.1 Lower Basic: 9.7

System Storage

Apr1st Forecast



[redacted] NWO

From: [redacted] NWD02
Sent: Monday, April 04, 2011 3:09 PM
To: Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] E NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] S NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] L NWO; [redacted] NWD02; [redacted] W NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Schenk, Kathryn M NWO; [redacted] NWO; [redacted] M NWO; [redacted] NWO; [redacted] NWO; [redacted] I NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; Farmer, Monique L NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Blechinger, Erik T NWO; [redacted] NWK [redacted] NWO
Subject: Final April 2011 Monthly Reservoir Studies (UNCLASSIFIED)
Attachments: resfcastapr.pdf; Apr.2011-notes.docx; Runoff_Forecast_Apr2011.pdf

Classification: UNCLASSIFIED
Caveats: NONE

All-

Enclosed are the Final April Monthly Reservoir Studies. No changes from the draft studies.

Thanks,

[redacted]
Hydraulic Engineer
Missouri River Basin Water Management
[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

APR 1, 2011 / BASIC CONDITION / 33.8 MAF / BALANCED
FULL SERV / NAV SEAS +10 DAYS / NO MAY PULSE
Elevations & Storages are for Date Shown
Avg Discharge & Energy are Monthly Values
Date of Study: April 1, 2011

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2239.7	2241.0	2243.9	2243.9	2242.0	2240.6	2239.3	2238.3	2236.8	2235.3	2234.0
DISCH KCFS	7.4	7.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	12.0	13.0	13.0
GARRISON --------												
ELEV FTMSL	1840.5	1843.7	1845.0	1848.0	1848.6	1846.6	1844.6	1842.2	1840.1	1839.7	1838.4	1837.5
DISCH KCFS	21.8	15.0	22.0	29.0	29.0	29.0	29.6	30.5	30.5	19.0	25.0	25.0
OAHE ------------												
ELEV FTMSL	1614.3	1616.0	1615.7	1615.7	1614.2	1612.1	1609.8	1609.1	1607.9	1606.7	1606.9	1607.5
DISCH KCFS	13.9	15.9	28.4	34.2	37.1	38.0	41.8	33.4	36.1	24.9	23.6	22.7
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	16.4	28.4	34.2	37.0	37.6	41.4	33.1	35.8	24.7	23.6	22.7
FORT RANDALL ----												
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.6	1339.4	1344.9	1350.1
DISCH KCFS	15.1	20.9	33.2	36.5	37.5	37.6	43.8	43.2	43.3	23.0	18.2	17.0
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	35.5	39.0	39.0	39.0	45.0	45.0	45.0	25.0	20.0	20.0
SYSTEM ----------												
STORAGE 1000 AF	61720	63480	63965	65694	65376	63533	61633	59661	57931	57180	56853	56834
ENERGY GWh	11089	607	994	1128	1211	1219	1241	1162	1135	819	821	752
PEAK POWER MW		2389	2397	2401	2394	2381	2370	2344	2293	2293	2314	2320

APR 1, 2011 / LOWER BASIC / 25.7 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAY 16.9 (CALC)

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2238.6	2238.0	2238.8	2237.7	2235.9	2234.9	2234.5	2233.9	2232.6	2230.9	2229.4
DISCH KCFS	7.4	7.0	11.0	9.0	9.0	9.0	7.5	6.0	6.3	9.0	11.0	11.0
GARRISON --------												
ELEV FTMSL	1840.5	1842.0	1842.4	1843.9	1843.4	1841.7	1840.5	1839.4	1838.6	1837.2	1835.2	1833.7
DISCH KCFS	21.8	15.0	19.5	22.0	22.0	22.0	19.3	16.5	16.5	19.0	24.0	24.0
OAHE ------------												
ELEV FTMSL	1614.3	1614.9	1613.6	1612.3	1609.9	1607.0	1604.5	1603.1	1602.3	1602.3	1602.8	1603.6
DISCH KCFS	13.9	18.6	28.9	31.6	33.7	33.6	30.8	22.1	19.5	17.9	21.1	20.4
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	19.1	28.9	31.6	33.6	33.2	30.3	21.7	19.1	17.6	21.1	20.4
FORT RANDALL ----												
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	22.4	32.7	32.9	33.7	33.0	32.5	31.7	26.5	15.9	15.7	14.5
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	33.9	34.3	34.3	34.0	33.5	33.1	28.2	17.0	17.0	17.0
SYSTEM ----------												
STORAGE 1000 AF	61720	62283	61714	61908	60676	58846	57374	55871	54809	54167	53719	53568
ENERGY GWh	9061	650	971	978	1040	1028	911	775	668	632	736	673
PEAK POWER MW		2369	2376	2377	2363	2332	2318	2296	2255	2256	2276	2282

APR 1, 2011 / UPPER BASIC / 43.0 MAF / BALANCED
FULL SERV / NAV SEAS +10 DAYS / NO MAY PULSE

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2241.2	2243.0	2248.7	2248.4	2245.5	2242.8	2240.1	2237.5	2236.3	2235.0	2234.0
DISCH KCFS	7.4	8.0	15.0	14.0	17.5	18.0	17.9	18.0	17.7	12.0	13.0	13.0
GARRISON --------												
ELEV FTMSL	1840.5	1842.7	1843.0	1848.8	1850.2	1848.0	1845.6	1843.0	1841.0	1840.4	1838.7	1837.5
DISCH KCFS	21.8	25.5	40.0	40.0	40.0	40.0	41.5	41.5	40.3	22.0	28.0	28.0
OAHE ------------												
ELEV FTMSL	1614.3	1616.8	1616.8	1617.5	1615.4	1613.1	1610.7	1609.6	1608.0	1606.8	1606.9	1607.5
DISCH KCFS	13.9	23.7	47.3	45.9	53.5	50.9	55.3	47.3	49.7	28.0	27.2	26.1
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	24.2	47.3	45.9	53.4	50.7	55.0	47.0	49.6	27.9	27.2	26.1
FORT RANDALL ----												
ELEV FTMSL	1357.7	1358.0	1362.0	1362.0	1360.0	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	27.6	44.6	49.8	57.3	57.7	57.7	57.3	57.3	26.3	21.9	20.6
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	32.0	48.0	54.0	59.5	59.5	59.5	59.5	59.5	29.0	24.0	24.0
SYSTEM ----------												
STORAGE 1000 AF	61720	63881	64728	68409	67867	65166	62765	60233	58036	57318	56888	56830
ENERGY GWh	13882	868	1462	1419	1561	1525	1510	1455	1391	917	927	848
PEAK POWER MW		2384	2350	2361	2369	2385	2373	2352	2291	2295	2314	2320

VALUES IN 1000 AF EXCEPT AS INDICATED

	31MAR11		2011										2012
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	7149	668	1236	1851	938	353	333	385	192	90	102	329	312	360
DEPLETION	492	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-153	-118
EVAPORATION	483				30	94	117	101	45	21	24	51		
MOD INFLOW	6174	643	938	1326	674	248	291	326	187	88	100	410	465	478
RELEASE	7188	417	646	655	676	676	623	615	298	139	159	738	799	748
STOR CHANGE	-1014	226	292	671	-2	-429	-332	-289	-110	-51	-59	-328	-334	-270
STORAGE	15803	16029	16322	16993	16991	16562	16230	15941	15831	15780	15721	15393	15059	14789
ELEV FTMSL	2238.7	2239.7	2241.0	2243.9	2243.9	2242.0	2240.6	2239.3	2238.8	2238.6	2238.3	2236.8	2235.3	2234.0
DISCH KCFS	7.4	7.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	10.0	10.0	12.0	13.0	13.0
POWER														
AVE POWER MW		97	145	152	153	153	145	138	138	138	138	161	164	163
PEAK POW MW		166	167	169	169	168	167	166	166	166	165	164	163	162
ENERGY GWH	1176.6	69.8	107.8	109.7	114.0	113.6	104.4	103.0	49.7	23.2	26.5	120.1	121.8	113.2
--GARRISON--														
NAT INFLOW	10593	1535	1355	2916	1946	604	452	523	199	93	106	247	261	356
DEPLETION	980	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-87	-57
CHAN STOR	-55	4	-34	-5			5	5			0	-20	-10	
EVAPORATION	552				35	109	135	115	51	23	27	57		
REG INFLOW	16195	1958	1790	2801	1986	1064	1087	1053	567	265	303	1023	1138	1161
RELEASE	17131	893	1353	1726	1783	1783	1760	1875	907	423	484	1168	1537	1438
STOR CHANGE	-937	1066	437	1075	202	-719	-673	-823	-341	-159	-181	-145	-400	-277
STORAGE	19049	20115	20552	21627	21830	21110	20437	19615	19274	19115	18934	18789	18389	18112
ELEV FTMSL	1840.5	1843.7	1845.0	1848.0	1848.6	1846.6	1844.6	1842.2	1841.2	1840.7	1840.1	1839.7	1838.4	1837.5
DISCH KCFS	21.8	15.0	22.0	29.0	29.0	29.0	29.6	30.5	30.5	30.5	30.5	19.0	25.0	25.0
POWER														
AVE POWER MW		191	283	376	379	378	381	389	386	385	384	240	313	311
PEAK POW MW		499	500	502	502	501	499	488	481	480	478	476	471	468
ENERGY GWH	2649.4	137.6	210.3	270.5	282.2	281.1	274.6	289.1	138.8	64.6	73.7	178.2	232.6	216.2
--OAHE--														
NAT INFLOW	2106	650	400	460	185	65	111	66	34	16	18		12	90
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-25	-25			-2	-4		0	0	45	-24	
EVAPORATION	534				34	106	129	110	50	23	26	56		
REG INFLOW	18061	1519	1657	2015	1761	1626	1712	1837	890	416	475	1146	1507	1500
RELEASE	20317	944	1745	2033	2279	2335	2487	2056	986	493	670	1531	1450	1308
STOR CHANGE	-2256	575	-89	-18	-518	-708	-776	-219	-95	-77	-195	-385	57	192
STORAGE	21093	21668	21579	21561	21043	20335	19559	19340	19245	19168	18973	18588	18645	18837
ELEV FTMSL	1614.3	1616.0	1615.7	1615.7	1614.2	1612.1	1609.8	1609.1	1608.8	1608.6	1607.9	1606.7	1606.9	1607.5
DISCH KCFS	13.9	15.9	28.4	34.2	37.1	38.0	41.8	33.4	33.1	35.5	42.2	24.9	23.6	22.7
POWER														
AVE POWER MW		213	381	458	494	502	546	434	429	459	543	321	303	293
PEAK POW MW		752	751	750	743	732	720	716	715	713	710	704	705	708
ENERGY GWH	3228.9	153.5	283.8	329.7	367.9	373.4	393.0	323.2	154.6	77.1	104.3	238.7	225.6	204.0
--BIG BEND--														
EVAPORATION	103				6	20	25	22	10	5	5	11		
REG INFLOW	20214	944	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
RELEASE	20244	974	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	16.4	28.4	34.2	37.0	37.6	41.4	33.1	32.8	35.2	41.9	24.7	23.6	22.7
POWER														
AVE POWER MW		76	133	160	173	176	196	161	163	175	207	124	115	109
PEAK POW MW		495	509	509	509	509	517	538	538	538	538	538	538	528
ENERGY GWH	1170.6	54.4	98.8	115.1	128.7	131.0	141.0	120.0	58.7	29.4	39.8	92.0	85.9	75.8
--FORT RANDALL--														
NAT INFLOW	737	207	147	152	57	39	38	5	3	1	2	12	25	49
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117				8	25	31	25	9	4	4	10		
REG INFLOW	20788	1177	1883	2173	2304	2314	2462	2014	968	485	661	1521	1472	1354
RELEASE	21426	1242	2039	2173	2304	2313	2607	2656	1289	601	687	1414	1122	980
STOR CHANGE	-638	-65	-156	0	0	1	-145	-642	-320	-116	-27	107	350	374
STORAGE	3770	3705	3549	3549	3549	3550	3405	2764	2443	2327	2301	2408	2758	3132
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.1	1338.1	1337.6	1339.4	1344.9	1350.1
DISCH KCFS	15.1	20.9	33.2	36.5	37.5	37.6	43.8	43.2	43.3	43.3	43.3	23.0	18.2	17.0
POWER														
AVE POWER MW		180	281	306	314	315	341	323	301	288	283	168	138	136
PEAK POW MW		362	356	356	356	356	350	319	297	288	286	294	319	339
ENERGY GWH	2046.8	129.4	208.9	220.6	233.8	234.7	245.4	240.6	108.2	48.3	54.4	125.1	103.0	94.4
--GAVINS POINT--														
NAT INFLOW	1545	250	186	178	137	115	111	120	59	28	31	100	100	130
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-5	-11	-24	-6	-2	0	-12	1	0	0	0	38	9	2
EVAPORATION	36				2	6	9	8	3	2	2	4		
REG INFLOW	22815	1476	2183	2321	2398	2411	2703	2767	1339	625	714	1537	1230	1112
RELEASE	22827	1488	2183	2321	2398	2398	2678	2767	1339	625	714	1537	1230	1150
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	35.5	39.0	39.0	39.0	45.0	45.0	45.0	45.0	45.0	25.0	20.0	20.0
POWER														
AVE POWER MW		86	113	114	114	114	115	116	116	116	116	88	71	70
PEAK POW MW		114	114	114	114	115	116	116	116	116	116	117	117	114
ENERGY GWH	817.0	61.9	84.0	82.1	84.8	85.1	82.9	86.2	41.7	19.5	22.3	65.3	52.5	48.7
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	3196	1279	700	350	250	150	110	86	42	19	22	56	40	92
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	25771	2745	2847	2640	2609	2512	2764	2842	1374	641	733	1580	1256	1228
KCFS		46.1	46.3	44.4	42.4	40.9	46.4	46.2	46.2	46.2	46.2	25.7	20.4	21.4
--TOTAL--														
NAT INFLOW	25326	4589	4024	5907	3513	1326	1155	1185	528	246	282	744	750	1077
DEPLETION	2548	102	610	1502	1105	295	-163	-63	-149	-69	-79	-209	-204	-130
CHAN STOR	-68	18	-83	-36	-2	0	-9	2	0	0	-1	65	-25	2
EVAPORATION	1825				115	361	446	380	168	78	88	189		
STORAGE	61720	63480	63965	65694	65376	63533	61633	59661	58795	58392	57931	57180	56853	56834
SYSTEM POWER														
AVE POWER MW		842	1336	1566	1628	1638	1724	1562	1533	1560	1671	1101	1104	1081
PEAK POW MW		2389	2397	2401	2394	2381	2370	2344	2312	2301	2293	2293	2314	2320
ENERGY GWH	11089.3	606.6	993.7	1127.7	1211.3	1218.9	1241.3	1162.0	551.8	262.1	320.8	819.4	821.3	752.2
DAILY GWH		20.2	32.1	37.6	39.1	39.3	41.4	37.5	36.8	37.4	40.1	26.4	26.5	25.9

	31MAR11 INI-SUM	30APR	2011 31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	2012 29FEB
--FORT PECK--														
NAT INFLOW	4814	434	742	1111	563	282	266	308	154	72	82	263	250	288
DEPLETION	408	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION	568				35	110	137	119	54	25	28	61		
MOD INFLOW	3838	396	547	706	309	171	237	279	124	58	66	282	319	343
RELEASE	5786	417	676	536	553	553	446	369	179	83	111	553	676	633
STOR CHANGE	-1948	-21	-129	170	-245	-382	-209	-90	-55	-25	-45	-272	-357	-290
STORAGE	15803	15782	15653	15824	15579	15197	14988	14899	14844	14819	14774	14502	14145	13855
ELEV FTMSL	2238.7	2238.6	2238.0	2238.8	2237.7	2235.9	2234.9	2234.5	2234.3	2234.1	2233.9	2232.6	2230.9	2229.4
DISCH KCFS	7.4	7.0	11.0	9.0	9.0	9.0	7.5	6.0	6.0	6.0	7.0	9.0	11.0	11.0
POWER														
AVE POWER MW		97	150	124	124	124	103	82	82	82	95	122	146	145
PEAK POW MW		166	165	166	165	164	163	163	162	162	162	161	160	159
ENERGY GWH	952.7	69.7	111.6	89.5	92.4	92.0	73.9	61.1	29.5	13.8	18.3	91.0	108.8	101.2
--GARRISON--														
NAT INFLOW	7002	998	813	1750	1168	483	362	418	159	74	85	198	209	285
DEPLETION	901	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR	-36	4	-39	19			15	15			-10	-20	-20	
EVAPORATION	660				41	129	160	137	61	28	32	69		
REG INFLOW	11191	1397	1340	1781	1187	796	770	644	369	172	203	714	888	930
RELEASE	13274	893	1199	1309	1353	1353	1147	1015	491	229	262	1168	1476	1381
STOR CHANGE	-2083	505	140	472	-166	-557	-377	-370	-122	-57	-59	-454	-588	-451
STORAGE	19049	19554	19694	20166	20000	19444	19067	18696	18575	18518	18459	18005	17417	16966
ELEV FTMSL	1840.5	1842.0	1842.4	1843.9	1843.4	1841.7	1840.5	1839.4	1839.0	1838.8	1838.6	1837.2	1835.2	1833.7
DISCH KCFS	21.8	15.0	19.5	22.0	22.0	22.0	19.3	16.5	16.5	16.5	16.5	19.0	24.0	24.0
POWER														
AVE POWER MW		190	248	281	282	280	244	208	207	207	207	237	295	292
PEAK POW MW		485	491	499	498	483	479	475	474	473	472	467	460	454
ENERGY GWH	2020.0	137.0	184.5	202.2	209.5	208.3	175.6	155.1	74.7	34.8	39.7	176.1	219.5	203.1
--OAHE--														
NAT INFLOW	1380	423	240	276	111	52	89	53	27	13	14		10	72
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-16	-9			11	11				-10	-21	
EVAPORATION	620				41	124	150	127	57	26	30	65		
REG INFLOW	13393	1292	1352	1431	1250	1165	1069	962	460	215	246	1081	1447	1425
RELEASE	16824	1105	1776	1879	2072	2068	1835	1361	589	310	258	1099	1299	1172
STOR CHANGE	-3431	186	-425	-449	-822	-903	-766	-399	-128	-95	-13	-19	148	253
STORAGE	21093	21279	20854	20406	19584	18681	17915	17516	17388	17293	17280	17261	17409	17662
ELEV FTMSL	1614.3	1614.9	1613.6	1612.3	1609.9	1607.0	1604.5	1603.1	1602.7	1602.4	1602.3	1602.3	1602.8	1603.6
DISCH KCFS	13.9	18.6	28.9	31.6	33.7	33.6	30.8	22.1	19.8	22.3	16.3	17.9	21.1	20.4
POWER														
AVE POWER MW		249	385	418	441	435	393	280	249	280	205	225	266	257
PEAK POW MW		746	740	733	720	705	692	685	682	681	680	680	683	687
ENERGY GWH	2629.8	179.2	286.5	301.0	328.4	323.4	283.1	208.4	89.7	47.1	39.3	167.2	197.5	178.9
--BIG BEND--														
EVAPORATION	129				8	24	31	27	12	6	7	14		
REG INFLOW	16695	1105	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
RELEASE	16725	1135	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	19.1	28.9	31.6	33.6	33.2	30.3	21.7	19.4	21.9	15.9	17.6	21.1	20.4
POWER														
AVE POWER MW		88	135	148	157	156	144	106	97	110	80	89	104	98
PEAK POW MW		495	509	509	509	517	538	538	538	538	538	538	538	529
ENERGY GWH	965.6	63.4	100.6	106.4	116.9	115.7	103.4	79.1	35.0	18.5	15.4	66.1	77.1	68.0
--FORT RANDALL--														
NAT INFLOW	487	135	88	91	34	31	30	4	3	1	1	10	20	39
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146				10	32	39	31	12	5	5	12		
REG INFLOW	16988	1266	1855	1958	2070	2028	1788	1306	565	300	248	1080	1316	1208
RELEASE	17637	1331	2011	1958	2070	2028	1934	1949	887	416	274	978	966	834
STOR CHANGE	-649	-65	-156		0	0	-146	-643	-322	-116	-26	102	350	374
STORAGE	3770	3705	3549	3549	3549	3549	3402	2759	2437	2321	2295	2397	2747	3121
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1337.9	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	22.4	32.7	32.9	33.7	33.0	32.5	31.7	29.8	30.0	17.3	15.9	15.7	14.5
POWER														
AVE POWER MW		193	277	277	283	277	271	254	225	219	126	117	119	115
PEAK POW MW		362	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1742.5	138.6	206.1	199.2	210.4	206.3	195.4	188.7	81.0	36.8	24.1	86.8	88.7	80.3
--GAVINS POINT--														
NAT INFLOW	1099	163	112	107	82	92	89	96	47	22	25	80	80	104
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	0	-14	-20	0	-1	1	1	1	3	0	24	3	0	2
EVAPORATION	45				3	8	11	10	4	2	2	5		
REG INFLOW	18577	1476	2084	2041	2109	2104	2018	2035	928	433	317	1045	1045	940
RELEASE	18589	1488	2084	2041	2109	2091	1993	2035	928	433	317	1045	1045	978
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.0	17.0	17.0	17.0
POWER														
AVE POWER MW		86	110	111	111	110	111	111	107	107	71	60	60	60
PEAK POW MW		114	114	114	114	115	117	117	117	117	117	117	117	114
ENERGY GWH	750.4	61.9	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	44.7	44.7	41.5
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	2104	831	420	210	150	120	87	69	33	15	18	45	32	74
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	20441	2297	2468	2220	2220	2175	2056	2093	955	446	332	1077	1063	1038
KCFS		38.6	40.1	37.3	36.1	35.4	34.6	34.0	32.1	32.1	20.9	17.5	17.3	18.0
--TOTAL--														
NAT INFLOW	16886	2984	2415	3545	2108	1060	923	948	422	197	225	596	601	862
DEPLETION	2385	139	441	1141	981	289	-161	-66	-104	-49	-55	-94	-55	-22
CHAN STOR	-46	15	-75	10	-1	1	26	28	3	0	14	-28	-41	2
EVAPORATION	2167				138	427	527	451	200	92	105	227		
STORAGE	61720	62283	61714	61908	60676	58846	57374	55871	55245	54952	54809	54167	53719	53568
SYSTEM POWER														
AVE POWER MW		903	1305	1358	1398	1382	1266	1041	968	1005	783	849	990	967
PEAK POW MW		2369	2376	2377	2363	2332	2318	2296	2269	2258	2255	2256	2276	2282
ENERGY GWH	9061.0	649.8	970.9	977.8	1039.8	1027.9	911.2	774.8	348.3	168.8	150.4	631.9	736.4	673.0
DAILY GWH		21.7	31.3	32.6	33.5	33.2	30.4	25.0	23.2	24.1	18.8	20.4	23.8	23.2

VALUES IN 1000 AF EXCEPT AS INDICATED

31MAR11		2011										2012	
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	9496	1022	1592	2726	1208	424	400	462	231	108	123	395	374	432
DEPLETION	240	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105
EVAPORATION	338				23	73	91	77	18	8	9	38		
MOD INFLOW	8918	1045	1332	2213	981	413	438	474	243	113	130	480	520	537
RELEASE	9929	476	922	833	1076	1107	1068	1107	536	250	270	738	799	748
STOR CHANGE	-1011	569	410	1380	-95	-694	-629	-633	-293	-137	-140	-258	-279	-211
STORAGE	15803	16372	16782	18162	18066	17372	16743	16110	15817	15681	15540	15282	15003	14792
ELEV FTMSL	2238.7	2241.2	2243.0	2248.7	2248.4	2245.5	2242.8	2240.1	2238.8	2238.1	2237.5	2236.3	2235.0	2234.0
DISCH KCFS	7.4	8.0	15.0	14.0	17.5	18.0	17.9	18.0	18.0	18.0	17.0	12.0	13.0	13.0
POWER														
AVE POWER MW		111	168	171	172	171	169	167	166	165	165	161	163	163
PEAK POW MW		168	169	173	172	170	168	166	165	165	164	164	163	162
ENERGY GWH	1302.7	79.9	124.9	122.9	128.2	127.3	121.8	124.3	59.6	27.7	31.6	119.7	121.5	113.1
--GARRISON--														
NAT INFLOW	13940	1793	1792	4384	2562	725	542	628	239	112	127	296	313	427
DEPLETION	988	18	100	802	621	93	-133		-118	-55	-63	-117	-96	-64
CHAN STOR	-53	-6	-68	10	-33	-5	1	-1			10	49	-10	
EVAPORATION	385				27	84	103	87	20	9	11	44		
REG INFLOW	22443	2245	2547	4425	2958	1650	1640	1647	872	407	459	1156	1199	1239
RELEASE	23378	1517	2460	2380	2460	2460	2467	2552	1235	576	587	1353	1722	1611
STOR CHANGE	-935	728	87	2045	498	-809	-827	-905	-362	-169	-128	-197	-523	-372
STORAGE	19049	19777	19864	21908	22406	21597	20770	19865	19503	19334	19206	19009	18486	18114
ELEV FTMSL	1840.5	1842.7	1843.0	1848.8	1850.2	1848.0	1845.6	1843.0	1841.9	1841.4	1841.0	1840.4	1838.7	1837.5
DISCH KCFS	21.8	25.5	40.0	40.0	40.0	40.0	41.5	41.5	41.5	41.5	37.0	22.0	28.0	28.0
POWER														
AVE POWER MW		323	489	500	503	503	501	499	491	483	454	278	351	348
PEAK POW MW		495	498	503	504	502	500	498	484	482	481	479	473	468
ENERGY GWH	3491.0	232.3	363.5	360.2	374.3	374.1	360.7	371.2	176.6	81.1	87.1	206.9	261.0	242.0
--OAHE--														
NAT INFLOW	2907	837	560	752	266	78	133	79	40	19	21		14	108
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-18	-14	-52				-5	0			18	59	-24	
EVAPORATION	373				26	81	99	84	20	9	10	42		
REG INFLOW	25263	2292	2897	2987	2526	2340	2468	2556	1254	585	615	1358	1694	1691
RELEASE	27517	1409	2906	2731	3288	3129	3291	2908	1390	682	887	1722	1672	1502
STOR CHANGE	-2255	883	-9	256	-762	-789	-823	-352	-136	-97	-272	-365	22	189
STORAGE	21093	21976	21967	22223	21461	20672	19849	19497	19361	19264	18992	18628	18650	18838
ELEV FTMSL	1614.3	1616.8	1616.8	1617.5	1615.4	1613.1	1610.7	1609.6	1609.2	1608.9	1608.0	1606.8	1606.9	1607.5
DISCH KCFS	13.9	23.7	47.3	45.9	53.5	50.9	55.3	47.3	46.7	49.1	55.9	28.0	27.2	26.1
POWER														
AVE POWER MW		318	633	617	703	665	702	612	604	628	693	361	349	336
PEAK POW MW		756	756	760	749	737	725	719	717	715	711	704	705	708
ENERGY GWH	4342.0	229.1	471.2	444.5	523.0	495.1	505.6	455.5	217.3	105.5	133.1	268.4	259.8	234.0
--BIG BEND--														
EVAPORATION	71				5	15	19	16	4	2	2	9		
REG INFLOW	27447	1409	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
RELEASE	27477	1439	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	24.2	47.3	45.9	53.4	50.7	55.0	47.0	46.6	49.0	55.8	27.9	27.2	26.1
POWER														
AVE POWER MW		110	202	196	236	237	260	228	230	241	274	139	133	125
PEAK POW MW		486	440	440	464	509	517	538	538	538	538	538	538	529
ENERGY GWH	1544.3	79.5	150.2	141.2	175.6	176.1	187.0	169.4	82.7	40.6	52.5	103.6	98.9	87.0
--FORT RANDALL--														
NAT INFLOW	968	230	206	243	80	47	46	6	4	2	2	14	30	59
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	82				6	19	24	18	4	2	2	7		
REG INFLOW	28288	1665	3103	2962	3339	3127	3288	2878	1385	680	884	1721	1699	1558
RELEASE	28936	1642	2743	2962	3521	3549	3434	3522	1706	796	910	1619	1349	1184
STOR CHANGE	-648	23	360		-182	-422	-146	-643	-321	-116	-26	102	350	374
STORAGE	3770	3793	4153	4153	3971	3549	3403	2759	2438	2322	2296	2398	2748	3122
ELEV FTMSL	1357.7	1358.0	1362.0	1362.0	1360.0	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	27.6	44.6	49.8	57.3	57.7	57.7	57.3	57.3	57.3	57.3	26.3	21.9	20.6
POWER														
AVE POWER MW		238	361	375	374	362	352	335	305	289	284	192	166	163
PEAK POW MW		365	375	375	370	354	349	317	294	285	283	293	319	339
ENERGY GWH	2352.3	171.1	268.6	270.0	278.1	269.7	253.1	249.0	110.0	48.6	54.5	142.8	123.3	113.6
--GAVINS POINT--														
NAT INFLOW	1969	279	260	285	192	138	133	144	71	33	38	120	120	156
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-13	-24	-33	-10	-14	-1	0	1	0	0	0	57	8	2
EVAPORATION	24				2	5	6	6	1	1	1	3		
REG INFLOW	30753	1892	2951	3213	3659	3672	3566	3659	1770	826	944	1783	1476	1343
RELEASE	30765	1904	2951	3213	3659	3659	3541	3659	1770	826	944	1783	1476	1381
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	32.0	48.0	54.0	59.5	59.5	59.5	59.5	59.5	59.5	59.5	29.0	24.0	24.0
POWER														
AVE POWER MW		106	112	111	110	111	113	115	115	115	115	101	84	83
PEAK POW MW		114	112	111	110	112	115	115	115	115	115	117	117	114
ENERGY GWH	849.3	76.3	83.5	79.9	81.7	82.4	81.6	85.2	41.2	19.2	22.0	75.3	62.7	58.1
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	4014	1524	840	560	350	180	132	103	50	23	27	67	48	110
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	34527	3406	3755	3742	3970	3803	3649	3751	1814	847	968	1837	1510	1477
KCFS		57.2	61.1	62.9	64.6	61.8	61.3	61.0	61.0	61.0	61.0	29.9	24.6	25.7
--TOTAL--														
NAT INFLOW	33294	5685	5250	8950	4658	1592	1386	1422	634	296	338	892	899	1292
DEPLETION	2304	75	495	1527	1094	208	-208	-85	-135	-63	-72	-202	-206	-124
CHAN STOR	-81	-43	-152	0	-47	-6	-5	0	0	0	27	168	-26	2
EVAPORATION	1272				89	277	341	289	67	31	35	143		
STORAGE	61720	63881	64728	68409	67867	65166	62765	60233	59120	58601	58036	57318	56888	56830
SYSTEM POWER														
AVE POWER MW		1206	1965	1971	2098	2049	2097	1955	1910	1921	1984	1232	1246	1218
PEAK POW MW		2384	2350	2361	2369	2385	2373	2352	2312	2299	2291	2295	2314	2320
ENERGY GWH	13881.6	868.2	1461.9	1418.8	1561.1	1524.7	1509.8	1454.7	687.5	322.7	380.9	916.6	927.3	847.7
DAILY GWH		28.9	47.2	47.3	50.4	49.2	50.3	46.9	45.8	46.1	47.6	29.6	29.9	29.2

INI-SUM 30APR 31MAY 30JUN 31JUL 31AUG 30SEP 31OCT 15NOV 22NOV 30NOV 31DEC 31JAN 29FEB

April 4th, 2011 Reservoir Monthly Study Call

General Conditions:

1. Past Runoff
   Last month's runoff was 231% of normal.
   Ranging from about 385% in the Sioux City reach to 156% in the Garrison reach. Due to continued plains snow melt runoff and wet soil conditions.

   Total system storage on March 31st – 61.7 MAF

2. Current Mountain Snow Pack (May thru July runoff)
   116% of normal – above Ft. Peck
   112% of normal – between Ft. Peck and Garrison
   114% of normal – total above Garrison

   Normally, 96 percent of the peak accumulation has occurred by April 1.

   Current Plains Snow Pack (March and April Runoff).
   Fort Peck reach – light snowpack (0"- 2" SWE) in central Montana. Trace amounts to the south of the reservoir.
   Garrison reach – light to moderate snowpack (2" – 4.5" SWE). Primarily in the Milk River and North Central North Dakota (north of the Missouri River).
   Oahe reach – Some snow left in North Dakota primarily in and around the Knife River area.
   Big Bend, Fort Randall, and Gavins Point reaches – No remaining snowpack.
   Gavins to Sioux City Reach – light to moderate snowpack (2.5" – 4" SWE) - North of a line from Aberdeen to Watertown, SD.

3. Forecasted Annual Runoff
   For April thru June - Higher probability of above normal precipitation in North Dakota and northeast Montana. Normal hydrologic conditions in the Dakotas, Wyoming, Montana, and Iowa through June. Moderate drought will continue to develop in southern Nebraska and central Kansas. Moderate to severe drought in eastern Colorado and western Kansas.

   Basic – 33.8 MAF (136% of Normal)
   UB – 43.0 MAF
   LB – 25.7 MAF

4. Gavins Releases
   March – 21.0 kcfs.
   Currently 21.0 kcfs. Will likely continue to release 21.0 kcfs through mid April when flows will be increased due to the service level increase and the start of the evacuation of stored flood water.

Monthly Studies

1. Next Water-Year Balancing – Will be 100% full at Feb 2012 – Basic and upper simulation.
   The 3 reservoirs will be below the base of flood control by the end of Feb 2012 for lower basic. Will be balanced for all 3 conditions.

2. Navigation Service Levels
   Basic – Full service levels likely going to flood water evacuation flows.
   Lower Basic – Full service for entire season.
   Upper Basic – Flood control releases all year (including spillway releases.)

3. Navigation Season Lengths
   0 Days shortening for lower basic.
   10 Day extension for basic and upper basic

4. Spring Pulses
   March – Cancelled due to high James River flows and flow limits being exceeded downstream.
   May – Likely cancelled due to service level increase for both the Basic and Upper Basic Conditions

5. Energy Generation
   Last month – 630 MkWhrs actual – long-term average for March 554 MkWhrs
   This year forecast – Basic Simulation – 11.5 BKWhrs. Long-term average approx 10.0 BKWhrs

6. Spring Forage Fish Spawn
   Will "favor" Garrison this year if there's not enough water to keep all 3 reservoirs rising
   All three reservoirs rise during period for Basic, Lower Basic, and Upper Basic.

Missouri River Basin
Calendar Year 2011
Forecasted

1-Apr-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
				Values in 1000 Acre Feet					
	(History)								
JAN 2011	431	299	120	86	67	273	1,003	1,276	1,276
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	119	38	108	61	-33	233	293	526	526
% OF NORM	138%	115%	998%	346%	67%	682%	141%	170%	170%
FEB 2011	580	457	318	217	236	524	1,808	2,333	3,609
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	220	101	228	168	106	432	823	1,256	1,782
% OF NORM	161%	128%	354%	443%	182%	570%	184%	217%	198%
MAR 2011	1,049	1,567	1,806	686	392	1,152	5,501	6,653	10,262
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	453	564	1,239	477	186	853	2,920	3,773	5,555
% OF NORM	176%	156%	319%	328%	190%	385%	213%	231%	218%
	(Forecast)								
APR 2011	668	1,535	650	207	250	1,279	3,310	4,589	14,851
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	19	455	169	63	70	919	776	1,695	7,250
% OF NORM	103%	142%	135%	144%	139%	355%	131%	159%	195%
MAY 2011	1,236	1,355	400	147	186	700	3,324	4,024	18,875
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	155	110	88	0	0	408	353	761	8,011
% OF NORM	114%	109%	128%	100%	100%	240%	112%	123%	174%
JUN 2011	1,851	2,916	460	152	178	350	5,557	5,907	24,782
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	239	249	37	0	0	64	525	589	8,600
% OF NORM	115%	109%	109%	100%	100%	122%	110%	111%	153%
JUL 2011	938	1,946	185	57	137	250	3,263	3,513	28,295
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	119	170	6	0	0	32	295	327	8,927
% OF NORM	115%	110%	103%	100%	100%	115%	110%	110%	146%
AUG 2011	353	604	65	39	115	150	1,176	1,326	29,621
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	0	0	0	19	0	19	8,946
% OF NORM	100%	100%	100%	100%	100%	115%	100%	101%	143%
SEP 2011	333	452	111	38	111	110	1,045	1,155	30,776
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	8,957
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	141%
OCT 2011	385	523	66	5	120	86	1,099	1,185	31,961
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	8,965
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	139%
NOV 2011	384	398	67	6	118	83	973	1,056	33,017
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	8,972
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	137%
DEC 2011	329	247	0	12	100	56	688	744	33,762
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	8,976
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	136%
				Calendar Year Totals					
	8,537	12,300	4,249	1,653	2,010	5,013	28,749	33,762	
NORMAL	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
DEPARTURE	1,324	1,688	1,876	770	329	2,990	5,987	8,976	
% OF NORM	118%	116%	179%	187%	120%	248%	126%	136%	

[redacted] NWO

From: [redacted] NWO
Sent: Monday, April 04, 2011 1:54 PM
To: Brant and Katie Keller; bjerke@westriv.com
Cc: creed@nd.gov; [redacted] NWO; [redacted] NWO; [redacted] NWO; Vohl, Neil W NWO; Farhat, Jody S NWD02; Swenson, Michael A NWD02
Subject: RE: Beulah (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Mr. Keller,
Releases from Garrison are currently at a 15,000 cfs daily average. This is less than normal.

As elevations on the Knife River increase, that can impede inflows at some of the tributaries. The Knife River is currently at 16.5 feet at the Hazen gage. Per the National Weather Service's data, that equates to roughly 4600 cfs in flows.

You would not see a change in flows, or elevations, at the Knife River in Beulah even if we decreased flows further on the Missouri River. This is due to the change in elevation from the mouth of the Knife near Stanton, up to Beulah. You can only push so much water through the channel capacity of the Knife, regardless of what's down stream...
[redacted]

-----Original Message-----
From: Brant and Katie Keller [mailto:bkkeller@westriv.com]
Sent: Monday, April 04, 2011 1:39 PM
To: [redacted] NWO; bjerke@westriv.com
Cc: creed@nd.gov; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO
Subject: RE: Beulah (UNCLASSIFIED)

I was just wondering what kind of release rates are coming out of Garrison Dam into the Missouri? Are they any less than normal or the same? You can see firsthand west of Beulah that the high level of the knife is not allowing spring creek to flow into it. Does anyone at what rate is the knife river flowing into the Missouri? Could we get see better flow if the Missouri was any lower?

Thanks,
Brant K
-----Original Message-----
From: [redacted] NWO [mailto:[redacted]@usace.army.mil]
Sent: Monday, April 04, 2011 1:00 PM
To: bjerke@westriv.com
Cc: creed@nd.gov; bkkeller@westriv.com; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO
Subject: FW: Beulah (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Mayor Bjerke,

Shannon Jeffers, my Chief of Engineering, and I stopped over at Beulah Friday afternoon and took some elevations around the area you and I'd visited Friday morning. Attached is a drawing with those elevations and our recommendations.

Although we could not get elevations all the way along the drainage channel due to the existing snow, we took some shots at key locations. It appears as though it would make sense to construct a small sandbag structure across the end of Fair Street to preclude the water from running out of the ditch and flowing East. Although this would back up water in the ditch further to the North, the elevation we shot on Front Street indicated that it was 1.9 feet higher than the ditch bank adjacent to Fair Street. Thus our recommendation would be to construct the sandbag structure on Fair Street, no more than 2 feet high. This structure should not be higher than the adjacent ditch bank.
In fact, I'd leave it about 6 inches low so that if the backwater gets high enough it would still flow down Fair street, verses through an adjacent private residence.

As the City begins to see backwater in the drainage way, you should closely monitor the impacts in the immediate area. If it appears as though the back water will create other problems, via something like a low area in the drainage ditch up near the railroad tracks or at one of the residences, you could remove a row or two of the sandbags on Fair Street.

Even if you had to lower the structure on Fair Street, in order to prevent any other problems, the structure would still help alleviate some of the problems that residents conveyed to us with having very high flows running down Fair street. We also noted on the drawing that the culvert at the West end of 1st St. SW would also need to be plugged, or you will see backwater from that. I'm not sure if that presents a big issue for the City or not, as it sounds like backwater will eventually come from that area anyway.

Feel free to give either Shannon or I a call if you have any further questions and let me know if you need any further assistance? We can both be reached at 701-654-7411.

[redacted]
Operations Project Manager
Garrison Project

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

APR 1, 2011 / BASIC CONDITION / 33.8 MAF / BALANCED
FULL SERV / NAV SEAS +10 DAYS / NO MAY PULSE
Elevations & Storages are for Date Shown
Avg Discharge & Energy are Monthly Values
Date of Study: April 1, 2011

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2239.7	2241.0	2243.9	2243.9	2242.0	2240.6	2239.3	2238.3	2236.8	2235.3	2234.0
DISCH KCFS	7.4	7.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	12.0	13.0	13.0
GARRISON --------												
ELEV FTMSL	1840.5	1843.7	1845.0	1848.0	1848.6	1846.6	1844.6	1842.2	1840.1	1839.7	1838.4	1837.5
DISCH KCFS	21.8	15.0	22.0	29.0	29.0	29.0	29.6	30.5	30.5	19.0	25.0	25.0
OAHE ------------												
ELEV FTMSL	1614.3	1616.0	1615.7	1615.7	1614.2	1612.1	1609.8	1609.1	1607.9	1606.7	1606.9	1607.5
DISCH KCFS	13.9	15.9	28.4	34.2	37.1	38.0	41.8	33.4	36.1	24.9	23.6	22.7
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	16.4	28.4	34.2	37.0	37.6	41.4	33.1	35.8	24.7	23.6	22.7
FORT RANDALL ----												
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.6	1339.4	1344.9	1350.1
DISCH KCFS	15.1	20.9	33.2	36.5	37.5	37.6	43.8	43.2	43.3	23.0	18.2	17.0
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	35.5	39.0	39.0	39.0	45.0	45.0	45.0	25.0	20.0	20.0
SYSTEM ----------												
STORAGE 1000 AF	61720	63480	63965	65694	65376	63533	61633	59661	57931	57180	56853	56834
ENERGY GWh	11089	607	994	1128	1211	1219	1241	1162	1135	819	821	752
PEAK POWER MW		2389	2397	2401	2394	2381	2370	2344	2293	2293	2314	2320

APR 1, 2011 / LOWER BASIC / 25.7 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAY 16.9 (CALC)

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2238.6	2238.0	2238.8	2237.7	2235.9	2234.9	2234.5	2233.9	2232.6	2230.9	2229.4
DISCH KCFS	7.4	7.0	11.0	9.0	9.0	9.0	7.5	6.0	6.3	9.0	11.0	11.0
GARRISON --------												
ELEV FTMSL	1840.5	1842.0	1842.4	1843.9	1843.4	1841.7	1840.5	1839.4	1838.6	1837.2	1835.2	1833.7
DISCH KCFS	21.8	15.0	19.5	22.0	22.0	22.0	19.3	16.5	16.5	19.0	24.0	24.0
OAHE ------------												
ELEV FTMSL	1614.3	1614.9	1613.6	1612.3	1609.9	1607.0	1604.5	1603.1	1602.3	1602.3	1602.8	1603.6
DISCH KCFS	13.9	18.6	28.9	31.6	33.7	33.6	30.8	22.1	19.5	17.9	21.1	20.4
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	19.1	28.9	31.6	33.6	33.2	30.3	21.7	19.1	17.6	21.1	20.4
FORT RANDALL ----												
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	22.4	32.7	32.9	33.7	33.0	32.5	31.7	26.5	15.9	15.7	14.5
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	33.9	34.3	34.3	34.0	33.5	33.1	28.2	17.0	17.0	17.0
SYSTEM ----------												
STORAGE 1000 AF	61720	62283	61714	61908	60676	58846	57374	55871	54809	54167	53719	53568
ENERGY GWh	9061	650	971	978	1040	1028	911	775	668	632	736	673
PEAK POWER MW		2369	2376	2377	2363	2332	2318	2296	2255	2256	2276	2282

APR 1, 2011 / UPPER BASIC / 43.0 MAF / BALANCED
FULL SERV / NAV SEAS +10 DAYS / NO MAY PULSE

	31-Mar-11	30-Apr	2011 31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29-Feb
FORT PECK -------												
ELEV FTMSL	2238.7	2241.2	2243.0	2248.7	2248.4	2245.5	2242.8	2240.1	2237.5	2236.3	2235.0	2234.0
DISCH KCFS	7.4	8.0	15.0	14.0	17.5	18.0	17.9	18.0	17.7	12.0	13.0	13.0
GARRISON --------												
ELEV FTMSL	1840.5	1842.7	1843.0	1848.8	1850.2	1848.0	1845.6	1843.0	1841.0	1840.4	1838.7	1837.5
DISCH KCFS	21.8	25.5	40.0	40.0	40.0	40.0	41.5	41.5	40.3	22.0	28.0	28.0
OAHE ------------												
ELEV FTMSL	1614.3	1616.8	1616.8	1617.5	1615.4	1613.1	1610.7	1609.6	1608.0	1606.8	1606.9	1607.5
DISCH KCFS	13.9	23.7	47.3	45.9	53.5	50.9	55.3	47.3	49.7	28.0	27.2	26.1
BIG BEND --------												
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	24.2	47.3	45.9	53.4	50.7	55.0	47.0	49.6	27.9	27.2	26.1
FORT RANDALL ----												
ELEV FTMSL	1357.7	1358.0	1362.0	1362.0	1360.0	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	27.6	44.6	49.8	57.3	57.7	57.7	57.3	57.3	26.3	21.9	20.6
GAVINS POINT ----												
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	32.0	48.0	54.0	59.5	59.5	59.5	59.5	59.5	29.0	24.0	24.0
SYSTEM ----------												
STORAGE 1000 AF	61720	63881	64728	68409	67867	65166	62765	60233	58036	57318	56888	56830
ENERGY GWh	13882	868	1462	1419	1561	1525	1510	1455	1391	917	927	848
PEAK POWER MW		2384	2350	2361	2369	2385	2373	2352	2291	2295	2314	2320

VALUES IN 1000 AF EXCEPT AS INDICATED

	31MAR11		2011										2012
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	7149	668	1236	1851	938	353	333	385	192	90	102	329	312	360
DEPLETION	492	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-153	-118
EVAPORATION	483				30	94	117	101	45	21	24	51		
MOD INFLOW	6174	643	938	1326	674	248	291	326	187	88	100	410	465	478
RELEASE	7188	417	646	655	676	676	623	615	298	139	159	738	799	748
STOR CHANGE	-1014	226	292	671	-2	-429	-332	-289	-110	-51	-59	-328	-334	-270
STORAGE	15803	16029	16322	16993	16991	16562	16230	15941	15831	15780	15721	15393	15059	14789
ELEV FTMSL	2238.7	2239.7	2241.0	2243.9	2243.9	2242.0	2240.6	2239.3	2238.8	2238.6	2238.3	2236.8	2235.3	2234.0
DISCH KCFS	7.4	7.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	10.0	10.0	12.0	13.0	13.0
POWER														
AVE POWER MW		97	145	152	153	153	145	138	138	138	138	161	164	163
PEAK POW MW		166	167	169	169	168	167	166	166	166	165	164	163	162
ENERGY GWH	1176.6	69.8	107.8	109.7	114.0	113.6	104.4	103.0	49.7	23.2	26.5	120.1	121.8	113.2
--GARRISON--														
NAT INFLOW	10593	1535	1355	2916	1946	604	452	523	199	93	106	247	261	356
DEPLETION	980	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-87	-57
CHAN STOR	-55	4	-34	-5			5	5			0	-20	-10	
EVAPORATION	552				35	109	135	115	51	23	27	57		
REG INFLOW	16195	1958	1790	2801	1986	1064	1087	1053	567	265	303	1023	1138	1161
RELEASE	17131	893	1353	1726	1783	1783	1760	1875	907	423	484	1168	1537	1438
STOR CHANGE	-937	1066	437	1075	202	-719	-673	-823	-341	-159	-181	-145	-400	-277
STORAGE	19049	20115	20552	21627	21830	21110	20437	19615	19274	19115	18934	18789	18389	18112
ELEV FTMSL	1840.5	1843.7	1845.0	1848.0	1848.6	1846.6	1844.6	1842.2	1841.2	1840.7	1840.1	1839.7	1838.4	1837.5
DISCH KCFS	21.8	15.0	22.0	29.0	29.0	29.0	29.6	30.5	30.5	30.5	30.5	19.0	25.0	25.0
POWER														
AVE POWER MW		191	283	376	379	378	381	389	386	385	384	240	313	311
PEAK POW MW		499	500	502	502	501	499	488	481	480	478	476	471	468
ENERGY GWH	2649.4	137.6	210.3	270.5	282.2	281.1	274.6	289.1	138.8	64.6	73.7	178.2	232.6	216.2
--OAHE--														
NAT INFLOW	2106	650	400	460	185	65	111	66	34	16	18		12	90
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-25	-25			-2	-4		0	0	45	-24	
EVAPORATION	534				34	106	129	110	50	23	26	56		
REG INFLOW	18061	1519	1657	2015	1761	1626	1712	1837	890	416	475	1146	1507	1500
RELEASE	20317	944	1745	2033	2279	2335	2487	2056	986	493	670	1531	1450	1308
STOR CHANGE	-2256	575	-89	-18	-518	-708	-776	-219	-95	-77	-195	-385	57	192
STORAGE	21093	21668	21579	21561	21043	20335	19559	19340	19245	19168	18973	18588	18645	18837
ELEV FTMSL	1614.3	1616.0	1615.7	1615.7	1614.2	1612.1	1609.8	1609.1	1608.8	1608.6	1607.9	1606.7	1606.9	1607.5
DISCH KCFS	13.9	15.9	28.4	34.2	37.1	38.0	41.8	33.4	33.1	35.5	42.2	24.9	23.6	22.7
POWER														
AVE POWER MW		213	381	458	494	502	546	434	429	459	543	321	303	293
PEAK POW MW		752	751	750	743	732	720	716	715	713	710	704	705	708
ENERGY GWH	3228.9	153.5	283.8	329.7	367.9	373.4	393.0	323.2	154.6	77.1	104.3	238.7	225.6	204.0
--BIG BEND--														
EVAPORATION	103				6	20	25	22	10	5	5	11		
REG INFLOW	20214	944	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
RELEASE	20244	974	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	16.4	28.4	34.2	37.0	37.6	41.4	33.1	32.8	35.2	41.9	24.7	23.6	22.7
POWER														
AVE POWER MW		76	133	160	173	176	196	161	163	175	207	124	115	109
PEAK POW MW		495	509	509	509	517	538	538	538	538	538	538	538	528
ENERGY GWH	1170.6	54.4	98.8	115.1	128.7	131.0	141.0	120.0	58.7	29.4	39.8	92.0	85.9	75.8
--FORT RANDALL--														
NAT INFLOW	737	207	147	152	57	39	38	5	3	1	2	12	25	49
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117				8	25	31	25	9	4	4	10		
REG INFLOW	20788	1177	1883	2173	2304	2314	2462	2014	968	485	661	1521	1472	1354
RELEASE	21426	1242	2039	2173	2304	2313	2607	2656	1289	601	687	1414	1122	980
STOR CHANGE	-638	-65	-156	0	0	1	-145	-642	-320	-116	-27	107	350	374
STORAGE	3770	3705	3549	3549	3549	3550	3405	2764	2443	2327	2301	2408	2758	3132
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.1	1338.1	1337.6	1339.4	1344.9	1350.1
DISCH KCFS	15.1	20.9	33.2	36.5	37.5	37.6	43.8	43.2	43.3	43.3	43.3	23.0	18.2	17.0
POWER														
AVE POWER MW		180	281	306	314	315	341	323	301	288	283	168	138	136
PEAK POW MW		362	356	356	356	356	350	319	297	288	286	294	319	339
ENERGY GWH	2046.8	129.4	208.9	220.6	233.8	234.7	245.4	240.6	108.2	48.3	54.4	125.1	103.0	94.4
--GAVINS POINT--														
NAT INFLOW	1545	250	186	178	137	115	111	120	59	28	31	100	100	130
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-5	-11	-24	-6	-2	0	-12	1	0	0	0	38	9	2
EVAPORATION	36				2	6	9	8	3	2	2	4		
REG INFLOW	22815	1476	2183	2321	2398	2411	2703	2767	1339	625	714	1537	1230	1112
RELEASE	22827	1488	2183	2321	2398	2398	2678	2767	1339	625	714	1537	1230	1150
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	35.5	39.0	39.0	39.0	45.0	45.0	45.0	45.0	45.0	25.0	20.0	20.0
POWER														
AVE POWER MW		86	113	114	114	114	115	116	116	116	116	88	71	70
PEAK POW MW		114	114	114	114	115	116	116	116	116	116	117	117	114
ENERGY GWH	817.0	61.9	84.0	82.1	84.8	85.1	82.9	86.2	41.7	19.5	22.3	65.3	52.5	48.7
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	3196	1279	700	350	250	150	110	86	42	19	22	56	40	92
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	25771	2745	2847	2640	2609	2512	2764	2842	1374	641	733	1580	1256	1228
KCFS		46.1	46.3	44.4	42.4	40.9	46.4	46.2	46.2	46.2	46.2	25.7	20.4	21.4
--TOTAL--														
NAT INFLOW	25326	4589	4024	5907	3513	1326	1155	1185	528	246	282	744	750	1077
DEPLETION	2548	102	610	1502	1105	295	-163	-63	-149	-69	-79	-209	-204	-130
CHAN STOR	-68	18	-83	-36	-2	0	-9	2	0	0	-1	65	-25	2
EVAPORATION	1825				115	361	446	380	168	78	88	189		
STORAGE	61720	63480	63965	65694	65376	63533	61633	59661	58795	58392	57931	57180	56853	56834
SYSTEM POWER														
AVE POWER MW		842	1336	1566	1628	1638	1724	1562	1533	1560	1671	1101	1104	1081
PEAK POW MW		2389	2397	2401	2394	2381	2370	2344	2312	2301	2293	2293	2314	2320
ENERGY GWH	11089.3	606.6	993.7	1127.7	1211.3	1218.9	1241.3	1162.0	551.8	262.1	320.8	819.4	821.3	752.2
DAILY GWH		20.2	32.1	37.6	39.1	39.3	41.4	37.5	36.8	37.4	40.1	26.4	26.5	25.9

TIME OF STUDY 15:01:52 FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAY 16.9 (CALC) STUDY NO 8
VALUES IN 1000 AF EXCEPT AS INDICATED

	31MAR11		2011										2012
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	4814	434	742	1111	563	282	266	308	154	72	82	263	250	288
DEPLETION	408	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION	568				35	110	137	119	54	25	28	61		
MOD INFLOW	3838	396	547	706	309	171	237	279	124	58	66	282	319	343
RELEASE	5786	417	676	536	553	553	446	369	179	83	111	553	676	633
STOR CHANGE	-1948	-21	-129	170	-245	-382	-209	-90	-55	-25	-45	-272	-357	-290
STORAGE	15803	15782	15653	15824	15579	15197	14988	14899	14844	14819	14774	14502	14145	13855
ELEV FTMSL	2238.7	2238.6	2238.0	2238.8	2237.7	2235.9	2234.9	2234.5	2234.3	2234.1	2233.9	2232.6	2230.9	2229.4
DISCH KCFS	7.4	7.0	11.0	9.0	9.0	9.0	7.5	6.0	6.0	6.0	7.0	9.0	11.0	11.0
POWER														
AVE POWER MW		97	150	124	124	124	103	82	82	82	95	122	146	145
PEAK POW MW		166	165	166	165	164	163	163	162	162	162	161	160	159
ENERGY GWH	952.7	69.7	111.6	89.5	92.4	92.0	73.9	61.1	29.5	13.8	18.3	91.0	108.8	101.2
--GARRISON--														
NAT INFLOW	7002	998	813	1750	1168	483	362	418	159	74	85	198	209	285
DEPLETION	901	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR	-36	4	-39	19			15	15			-10	-20	-20	
EVAPORATION	660				41	129	160	137	61	28	32	69		
REG INFLOW	11191	1397	1340	1781	1187	796	770	644	369	172	203	714	888	930
RELEASE	13274	893	1199	1309	1353	1353	1147	1015	491	229	262	1168	1476	1381
STOR CHANGE	-2083	505	140	472	-166	-557	-377	-370	-122	-57	-59	-454	-588	-451
STORAGE	19049	19554	19694	20166	20000	19444	19067	18696	18575	18518	18459	18005	17417	16966
ELEV FTMSL	1840.5	1842.0	1842.4	1843.9	1843.4	1841.7	1840.5	1839.4	1839.0	1838.8	1838.6	1837.2	1835.2	1833.7
DISCH KCFS	21.8	15.0	19.5	22.0	22.0	22.0	19.3	16.5	16.5	16.5	16.5	19.0	24.0	24.0
POWER														
AVE POWER MW		190	248	281	282	280	244	208	207	207	207	237	295	292
PEAK POW MW		485	491	499	498	483	479	475	474	473	472	467	460	454
ENERGY GWH	2020.0	137.0	184.5	202.2	209.5	208.3	175.6	155.1	74.7	34.8	39.7	176.1	219.5	203.1
--OAHE--														
NAT INFLOW	1380	423	240	276	111	52	89	53	27	13	14		10	72
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-16	-9			11	11				-10	-21	
EVAPORATION	620				41	124	150	127	57	26	30	65		
REG INFLOW	13393	1292	1352	1431	1250	1165	1069	962	460	215	246	1081	1447	1425
RELEASE	16824	1105	1776	1879	2072	2068	1835	1361	589	310	258	1099	1299	1172
STOR CHANGE	-3431	186	-425	-449	-822	-903	-766	-399	-128	-95	-13	-19	148	253
STORAGE	21093	21279	20854	20406	19584	18681	17915	17516	17388	17293	17280	17261	17409	17662
ELEV FTMSL	1614.3	1614.9	1613.6	1612.3	1609.9	1607.0	1604.5	1603.1	1602.7	1602.4	1602.3	1602.3	1602.8	1603.6
DISCH KCFS	13.9	18.6	28.9	31.6	33.7	33.6	30.8	22.1	19.8	22.3	16.3	17.9	21.1	20.4
POWER														
AVE POWER MW		249	385	418	441	435	393	280	249	280	205	225	266	257
PEAK POW MW		746	740	733	720	705	692	685	682	681	680	680	683	687
ENERGY GWH	2629.8	179.2	286.5	301.0	328.4	323.4	283.1	208.4	89.7	47.1	39.3	167.2	197.5	178.9
--BIG BEND--														
EVAPORATION	129				8	24	31	27	12	6	7	14		
REG INFLOW	16695	1105	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
RELEASE	16725	1135	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	19.1	28.9	31.6	33.6	33.2	30.3	21.7	19.4	21.9	15.9	17.6	21.1	20.4
POWER														
AVE POWER MW		88	135	148	157	156	144	106	97	110	80	89	104	98
PEAK POW MW		495	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	965.6	63.4	100.6	106.4	116.9	115.7	103.4	79.1	35.0	18.5	15.4	66.1	77.1	68.0
--FORT RANDALL--														
NAT INFLOW	487	135	88	91	34	31	30	4	3	1	1	10	20	39
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146				10	32	39	31	12	5	5	12		
REG INFLOW	16988	1266	1855	1958	2070	2028	1788	1306	565	300	248	1080	1316	1208
RELEASE	17637	1331	2011	1958	2070	2028	1934	1949	887	416	274	978	966	834
STOR CHANGE	-649	-65	-156		0	0	-146	-643	-322	-116	-26	102	350	374
STORAGE	3770	3705	3549	3549	3549	3549	3402	2759	2437	2321	2295	2397	2747	3121
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1337.9	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	22.4	32.7	32.9	33.7	33.0	32.5	31.7	29.8	30.0	17.3	15.9	15.7	14.5
POWER														
AVE POWER MW		193	277	277	283	277	271	254	225	219	126	117	119	115
PEAK POW MW		362	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1742.5	138.6	206.1	199.2	210.4	206.3	195.4	188.7	81.0	36.8	24.1	86.8	88.7	80.3
--GAVINS POINT--														
NAT INFLOW	1099	163	112	107	82	92	89	96	47	22	25	80	80	104
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	0	-14	-20	0	-1	1	1	1	3	0	24	3	0	2
EVAPORATION	45				3	8	11	10	4	2	2	5		
REG INFLOW	18577	1476	2084	2041	2109	2104	2018	2035	928	433	317	1045	1045	940
RELEASE	18589	1488	2084	2041	2109	2091	1993	2035	928	433	317	1045	1045	978
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.0	17.0	17.0	17.0
POWER														
AVE POWER MW		86	110	111	111	110	111	111	107	107	71	60	60	60
PEAK POW MW		114	114	114	114	115	117	117	117	117	117	117	117	114
ENERGY GWH	750.4	61.9	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	44.7	44.7	41.5
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	2104	831	420	210	150	120	87	69	33	15	18	45	32	74
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	20441	2297	2468	2220	2220	2175	2056	2093	955	446	332	1077	1063	1038
KCFS		38.6	40.1	37.3	36.1	35.4	34.6	34.0	32.1	32.1	20.9	17.5	17.3	18.0
--TOTAL--														
NAT INFLOW	16886	2984	2415	3545	2108	1060	923	948	422	197	225	596	601	862
DEPLETION	2385	139	441	1141	981	289	-161	-66	-104	-49	-55	-94	-55	-22
CHAN STOR	-46	15	-75	10	-1	1	26	28	3	0	14	-28	-41	2
EVAPORATION	2167				138	427	527	451	200	92	105	227		
STORAGE	61720	62283	61714	61908	60676	58846	57374	55871	55245	54952	54809	54167	53719	53568
SYSTEM POWER														
AVE POWER MW		903	1305	1358	1398	1382	1266	1041	968	1005	783	849	990	967
PEAK POW MW		2369	2376	2377	2363	2332	2318	2296	2269	2258	2255	2256	2276	2282
ENERGY GWH	9061.0	649.8	970.9	977.8	1039.8	1027.9	911.2	774.8	348.3	168.8	150.4	631.9	736.4	673.0
DAILY GWH		21.7	31.3	32.6	33.5	33.2	30.4	25.0	23.2	24.1	18.8	20.4	23.8	23.2
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

31MAR11		2011										2012	
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	9496	1022	1592	2726	1208	424	400	462	231	108	123	395	374	432
DEPLETION	240	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105
EVAPORATION	338				23	73	91	77	18	8	9	38		
MOD INFLOW	8918	1045	1332	2213	981	413	438	474	243	113	130	480	520	537
RELEASE	9929	476	922	833	1076	1107	1068	1107	536	250	270	738	799	748
STOR CHANGE	-1011	569	410	1380	-95	-694	-629	-633	-293	-137	-140	-258	-279	-211
STORAGE	15803	16372	16782	18162	18066	17372	16743	16110	15817	15681	15540	15282	15003	14792
ELEV FTMSL	2238.7	2241.2	2243.0	2248.7	2248.4	2245.5	2242.8	2240.1	2238.8	2238.1	2237.5	2236.3	2235.0	2234.0
DISCH KCFS	7.4	8.0	15.0	14.0	17.5	18.0	17.9	18.0	18.0	18.0	17.0	12.0	13.0	13.0
POWER														
AVE POWER MW		111	168	171	172	171	169	167	166	165	165	161	163	163
PEAK POW MW		168	169	173	172	170	168	166	165	165	164	164	163	162
ENERGY GWH	1302.7	79.9	124.9	122.9	128.2	127.3	121.8	124.3	59.6	27.7	31.6	119.7	121.5	113.1
--GARRISON--														
NAT INFLOW	13940	1793	1792	4384	2562	725	542	628	239	112	127	296	313	427
DEPLETION	988	18	100	802	621	93	-133		-118	-55	-63	-117	-96	-64
CHAN STOR	-53	-6	-68	10	-33	-5	1	-1			10	49	-10	
EVAPORATION	385				27	84	103	87	20	9	11	44		
REG INFLOW	22443	2245	2547	4425	2958	1650	1640	1647	872	407	459	1156	1199	1239
RELEASE	23378	1517	2460	2380	2460	2460	2467	2552	1235	576	587	1353	1722	1611
STOR CHANGE	-935	728	87	2045	498	-809	-827	-905	-362	-169	-128	-197	-523	-372
STORAGE	19049	19777	19864	21908	22406	21597	20770	19865	19503	19334	19206	19009	18486	18114
ELEV FTMSL	1840.5	1842.7	1843.0	1848.8	1850.2	1848.0	1845.6	1843.0	1841.9	1841.4	1841.0	1840.4	1838.7	1837.5
DISCH KCFS	21.8	25.5	40.0	40.0	40.0	40.0	41.5	41.5	41.5	41.5	37.0	22.0	28.0	28.0
POWER														
AVE POWER MW		323	489	500	503	503	501	499	491	483	454	278	351	348
PEAK POW MW		495	498	503	504	502	500	498	484	482	481	479	473	468
ENERGY GWH	3491.0	232.3	363.5	360.2	374.3	374.1	360.7	371.2	176.6	81.1	87.1	206.9	261.0	242.0
--OAHE--														
NAT INFLOW	2907	837	560	752	266	78	133	79	40	19	21		14	108
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-18	-14	-52				-5	0			18	59	-24	
EVAPORATION	373				26	81	99	84	20	9	10	42		
REG INFLOW	25263	2292	2897	2987	2526	2340	2468	2556	1254	585	615	1358	1694	1691
RELEASE	27517	1409	2906	2731	3288	3129	3291	2908	1390	682	887	1722	1672	1502
STOR CHANGE	-2255	883	-9	256	-762	-789	-823	-352	-136	-97	-272	-365	22	189
STORAGE	21093	21976	21967	22223	21461	20672	19849	19497	19361	19264	18992	18628	18650	18838
ELEV FTMSL	1614.3	1616.8	1616.8	1617.5	1615.4	1613.1	1610.7	1609.6	1609.2	1608.9	1608.0	1606.8	1606.9	1607.5
DISCH KCFS	13.9	23.7	47.3	45.9	53.5	50.9	55.3	47.3	46.7	49.1	55.9	28.0	27.2	26.1
POWER														
AVE POWER MW		318	633	617	703	665	702	612	604	628	693	361	349	336
PEAK POW MW		756	756	760	749	737	725	719	717	715	711	704	705	708
ENERGY GWH	4342.0	229.1	471.2	444.5	523.0	495.1	505.6	455.5	217.3	105.5	133.1	268.4	259.8	234.0
--BIG BEND--														
EVAPORATION	71				5	15	19	16	4	2	2	9		
REG INFLOW	27447	1409	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
RELEASE	27477	1439	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	24.2	47.3	45.9	53.4	50.7	55.0	47.0	46.6	49.0	55.8	27.9	27.2	26.1
POWER														
AVE POWER MW		110	202	196	236	237	260	228	230	241	274	139	133	125
PEAK POW MW		486	440	440	464	509	517	538	538	538	538	538	538	529
ENERGY GWH	1544.3	79.5	150.2	141.2	175.6	176.1	187.0	169.4	82.7	40.6	52.5	103.6	98.9	87.0
--FORT RANDALL--														
NAT INFLOW	968	230	206	243	80	47	46	6	4	2	2	14	30	59
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	82				6	19	24	18	4	2	2	7		
REG INFLOW	28288	1665	3103	2962	3339	3127	3288	2878	1385	680	884	1721	1699	1558
RELEASE	28936	1642	2743	2962	3521	3549	3434	3522	1706	796	910	1619	1349	1184
STOR CHANGE	-648	23	360		-182	-422	-146	-643	-321	-116	-26	102	350	374
STORAGE	3770	3793	4153	4153	3971	3549	3403	2759	2438	2322	2296	2398	2748	3122
ELEV FTMSL	1357.7	1358.0	1362.0	1362.0	1360.0	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	27.6	44.6	49.8	57.3	57.7	57.7	57.3	57.3	57.3	57.3	26.3	21.9	20.6
POWER														
AVE POWER MW		238	361	375	374	362	352	335	305	289	284	192	166	163
PEAK POW MW		365	375	375	370	354	349	317	294	285	283	293	319	339
ENERGY GWH	2352.3	171.1	268.6	270.0	278.1	269.7	253.1	249.0	110.0	48.6	54.5	142.8	123.3	113.6
--GAVINS POINT--														
NAT INFLOW	1969	279	260	285	192	138	133	144	71	33	38	120	120	156
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-13	-24	-33	-10	-14	-1	0	1	0	0	0	57	8	2
EVAPORATION	24				2	5	6	6	1	1	1	3		
REG INFLOW	30753	1892	2951	3213	3659	3672	3566	3659	1770	826	944	1783	1476	1343
RELEASE	30765	1904	2951	3213	3659	3659	3541	3659	1770	826	944	1783	1476	1381
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	32.0	48.0	54.0	59.5	59.5	59.5	59.5	59.5	59.5	59.5	29.0	24.0	24.0
POWER														
AVE POWER MW		106	112	111	110	111	113	115	115	115	115	101	84	83
PEAK POW MW		114	112	111	110	112	115	115	115	115	115	117	117	114
ENERGY GWH	849.3	76.3	83.5	79.9	81.7	82.4	81.6	85.2	41.2	19.2	22.0	75.3	62.7	58.1
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	4014	1524	840	560	350	180	132	103	50	23	27	67	48	110
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	34527	3406	3755	3742	3970	3803	3649	3751	1814	847	968	1837	1510	1477
KCFS		57.2	61.1	62.9	64.6	61.8	61.3	61.0	61.0	61.0	61.0	29.9	24.6	25.7
--TOTAL--														
NAT INFLOW	33294	5685	5250	8950	4658	1592	1386	1422	634	296	338	892	899	1292
DEPLETION	2304	75	495	1527	1094	208	-208	-85	-135	-63	-72	-202	-206	-124
CHAN STOR	-81	-43	-152	0	-47	-6	-5	0	0	0	27	168	-26	2
EVAPORATION	1272				89	277	341	289	67	31	35	143		
STORAGE	61720	63881	64728	68409	67867	65166	62765	60233	59120	58601	58036	57318	56888	56830
SYSTEM POWER														
AVE POWER MW		1206	1965	1971	2098	2049	2097	1955	1910	1921	1984	1232	1246	1218
PEAK POW MW		2384	2350	2361	2369	2385	2373	2352	2312	2299	2291	2295	2314	2320
ENERGY GWH	13881.6	868.2	1461.9	1418.8	1561.1	1524.7	1509.8	1454.7	687.5	322.7	380.9	916.6	927.3	847.7
DAILY GWH		28.9	47.2	47.3	50.4	49.2	50.3	46.9	45.8	46.1	47.6	29.6	29.9	29.2

[redacted] NWO

From: Rouse, Karen [karen.rouse@dnr.mo.gov]
Sent: Monday, April 04, 2011 8:52 AM
To: Farhat, Jody S NWD02
Subject: RE: Gavins Point March Spring Pulse Update (UNCLASSIFIED)

Jody -

I apologize if there was someone more appropriate to send this question to, but I am looking for clarification on where the temperature reading below Gavins Point Dam is measure from for the Spring Rise pulses? There is quite a discrepancy between the Gavins Point, Yankton and Sioux City readings. Thanks!

Karen Rouse
Hydrologist III
Water Resources Center
Missouri Department of Natural Resources
1101 Riverside Dr.
Jefferson City, MO 65102
(573) 751-0648
karen.rouse@dnr.mo.gov

-----Original Message-----
From: Farhat, Jody S NWD02 [mailto:Jody.S.Farhat@usace.army.mil]
Sent: Friday, March 25, 2011 12:47 PM
To: Farhat, Jody S NWD02; aaron_popelka@moran.senate.gov; Adams, Steve; alan.feyerherm@mail.house.gov; [redacted] NWD; ansley.mick@mail.house.gov; [redacted] NWD; [redacted] NWO; Blechinger, Erik T NWO; brian_klippenstein@blunt.senate.gov; brianne_dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; chad.ramey@mail.house.gov; Charlie Scott; chrisbrown@mail.house.gov; christina.mahoney@mail.house.gov; Cindy_Hall@mccaskill.senate.gov; colin.brainard@mail.house.gov; [redacted] NWK; corey_dukes@mccaskill.senate.gov; d_schwietert@thune.senate.gov; Dan.Engemann@mail.house.gov; darwin.curls@mail.house.gov; dayle_williamson@bennelson.senate.gov; Dean.Mathisen@mail.house.gov; deb.vanmatre@mail.house.gov; [redacted] NWD02; don_canton@hoeven.senate.gov; Eckert Uptmor, Kayla A NWO; edwin.elfmann@mail.house.gov; Engelhardt, Bruce W.; eric.bierwagen@mail.house.gov; eric.bohl@mail.house.gov; erick_lutt@bennelson.senate.gov; Farmer, Monique L NWO; [redacted] NWK; [redacted] HQ; Garland.Erbele@state.sd.us; gary.marble@mail.house.gov; Gaul, Steve; [redacted] NWK; [redacted] HQ02; [redacted] NWD02; [redacted] NWD02; harold_stones@roberts.senate.gov; Henry Maddux; Hofmann, Anthony J COL NWK; [redacted] NWK; janna.worsham@mail.house.gov; Frazier, Jennny; Mitas, Jim MVS External Stakeholder; Jim.Riis@state.sd.us; Drew, John; Rouse, Karen; ken.kopocis@mail.house.gov; [redacted] NWK; [redacted] NWD02; [redacted] NWK; [redacted] NWO; [redacted] NWD02; Mark.Rath@state.sd.us; marty_boeckel@conrad.senate.gov; Mcallister, Roy F. Jr NWO; McMahon, John R BG NWD; melissa.roe@mail.house.gov; mike.hayden@outdoorks.com; mike.matousek@mail.house.gov; nathan_taylor@tester.senate.gov; nathan_vanderplaats@harkin.senate.gov; nichole_distefano@mccaskill.senate.gov; patrick.carroll@mail.house.gov; patrick_lehman@johanns.senate.gov; [redacted] NWO; [redacted] NWK; peter_henry@blunt.senate.gov; phil_erdman@johanns.senate.gov; [redacted] NWD; randy.vogel@mail.house.gov; [redacted] NWO; richard.henkle@mail.house.gov; richard_bender@harkin.senate.gov; Ruch, Robert J COL NWO; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO; scott.corrie@mail.house.gov; [redacted] NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov;

sherry_kuntz@grassley.senate.gov; [redacted] NWK; [redacted] HQDA; [redacted] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; [redacted] NWO; [redacted] NWD02; [redacted] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; wayne.brincks@mail.house.gov; Wayne_NelsonStastny@fws.gov; Wells, Mike; Westrup, Nathan; zach_nelson@bennelson.senate.gov
Subject: RE: Gavins Point March Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All - the March spring pulse from Gavins Point dam remains on hold due to high flows on the James River in eastern South Dakota, and flows on the Missouri River in excess of the downstream flow limits at Omaha and Nebraska City.

The status of the March pulse is not expected to change over the next several days; a press release cancelling the pulse is planned for Monday, March 28 unless conditions change dramatically over the weekend, which is very unlikely.

Each day a PowerPoint presentation documenting our decision making process will be posted on our website at: http://www.nwd-mr.usace.army.mil/rcc/

Call or email if you have questions.

Regards,
Jody

Jody Farhat, P.E.
Chief, Missouri River Basin Water Management

jody.s.farhat@usace.army.mil
Office: 402-996-3840

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 01, 2011 3:33 PM
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02
Subject: Draft Monthly Studies (UNCLASSIFIED)
Attachments: resfcastapr.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Here are the draft monthly studies. We can discuss on Monday before sending it out to all.

Thanks,

[redacted]
Hydraulic Engineer
Missouri River Basin Water Management Division
[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

VALUES IN 1000 AF EXCEPT AS INDICATED

	31MAR11	2011										2012	
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	7149	668	1236	1851	938	353	333	385	192	90	102	329	312	360
DEPLETION	492	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-153	-118
EVAPORATION	483				30	94	117	101	45	21	24	51		
MOD INFLOW	6174	643	938	1326	674	248	291	326	187	88	100	410	465	478
RELEASE	7188	417	646	655	676	676	623	615	298	139	159	738	799	748
STOR CHANGE	-1014	226	292	671	-2	-429	-332	-289	-110	-51	-59	-328	-334	-270
STORAGE	15803	16029	16322	16993	16991	16562	16230	15941	15831	15780	15721	15393	15059	14789
ELEV FTMSL	2238.7	2239.7	2241.0	2243.9	2243.9	2242.0	2240.6	2239.3	2238.8	2238.6	2238.3	2236.8	2235.3	2234.0
DISCH KCFS	7.4	7.0	10.5	11.0	11.0	11.0	10.5	10.0	10.0	10.0	10.0	12.0	13.0	13.0
POWER														
AVE POWER MW		97	145	152	153	153	145	138	138	138	138	161	164	163
PEAK POW MW		166	167	169	169	168	167	166	166	166	165	164	163	162
ENERGY GWH	1176.6	69.8	107.8	109.7	114.0	113.6	104.4	103.0	49.7	23.2	26.5	120.1	121.8	113.2
--GARRISON--														
NAT INFLOW	10593	1535	1355	2916	1946	604	452	523	199	93	106	247	261	356
DEPLETION	980	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-87	-57
CHAN STOR	-55	4	-34	-5			5	5			0	-20	-10	
EVAPORATION	552				35	109	135	115	51	23	27	57		
REG INFLOW	16195	1958	1790	2801	1986	1064	1087	1053	567	265	303	1023	1138	1161
RELEASE	17131	893	1353	1726	1783	1783	1760	1875	907	423	484	1168	1537	1438
STOR CHANGE	-937	1066	437	1075	202	-719	-673	-823	-341	-159	-181	-145	-400	-277
STORAGE	19049	20115	20552	21627	21830	21110	20437	19615	19274	19115	18934	18789	18389	18112
ELEV FTMSL	1840.5	1843.7	1845.0	1848.0	1848.6	1846.6	1844.6	1842.2	1841.2	1840.7	1840.1	1839.7	1838.4	1837.5
DISCH KCFS	21.8	15.0	22.0	29.0	29.0	29.0	29.6	30.5	30.5	30.5	30.5	19.0	25.0	25.0
POWER														
AVE POWER MW		191	283	376	379	378	381	389	386	385	384	240	313	311
PEAK POW MW		499	500	502	502	501	499	488	481	480	478	476	471	468
ENERGY GWH	2649.4	137.6	210.3	270.5	282.2	281.1	274.6	289.1	138.8	64.6	73.7	178.2	232.6	216.2
--OAHE--														
NAT INFLOW	2106	650	400	460	185	65	111	66	34	16	18		12	90
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-25	-25			-2	-4		0	0	45	-24	
EVAPORATION	534				34	106	129	110	50	23	26	56		
REG INFLOW	18061	1519	1657	2015	1761	1626	1712	1837	890	416	475	1146	1507	1500
RELEASE	20317	944	1745	2033	2279	2335	2487	2056	986	493	670	1531	1450	1308
STOR CHANGE	-2256	575	-89	-18	-518	-708	-776	-219	-95	-77	-195	-385	57	192
STORAGE	21093	21668	21579	21561	21043	20335	19559	19340	19245	19168	18973	18588	18645	18837
ELEV FTMSL	1614.3	1616.0	1615.7	1615.7	1614.2	1612.1	1609.8	1609.1	1608.8	1608.6	1607.9	1606.7	1606.9	1607.5
DISCH KCFS	13.9	15.9	28.4	34.2	37.1	38.0	41.8	33.4	33.1	35.5	42.2	24.9	23.6	22.7
POWER														
AVE POWER MW		213	381	458	494	502	546	434	429	459	543	321	303	293
PEAK POW MW		752	751	750	743	732	720	716	715	713	710	704	705	708
ENERGY GWH	3228.9	153.5	283.8	329.7	367.9	373.4	393.0	323.2	154.6	77.1	104.3	238.7	225.6	204.0
--BIG BEND--														
EVAPORATION	103				6	20	25	22	10	5	5	11		
REG INFLOW	20214	944	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
RELEASE	20244	974	1745	2033	2273	2315	2463	2035	976	488	664	1520	1450	1308
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	16.4	28.4	34.2	37.0	37.6	41.4	33.1	32.8	35.2	41.9	24.7	23.6	22.7
POWER														
AVE POWER MW		76	133	160	173	176	196	161	163	175	207	124	115	109
PEAK POW MW		495	509	509	509	509	517	538	538	538	538	538	538	528
ENERGY GWH	1170.6	54.4	98.8	115.1	128.7	131.0	141.0	120.0	58.7	29.4	39.8	92.0	85.9	75.8
--FORT RANDALL--														
NAT INFLOW	737	207	147	152	57	39	38	5	3	1	2	12	25	49
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117				8	25	31	25	9	4	4	10		
REG INFLOW	20788	1177	1883	2173	2304	2314	2462	2014	968	485	661	1521	1472	1354
RELEASE	21426	1242	2039	2173	2304	2313	2607	2656	1289	601	687	1414	1122	980
STOR CHANGE	-638	-65	-156	0	0	1	-145	-642	-320	-116	-27	107	350	374
STORAGE	3770	3705	3549	3549	3549	3550	3405	2764	2443	2327	2301	2408	2758	3132
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.1	1338.1	1337.6	1339.4	1344.9	1350.1
DISCH KCFS	15.1	20.9	33.2	36.5	37.5	37.6	43.8	43.2	43.3	43.3	43.3	23.0	18.2	17.0
POWER														
AVE POWER MW		180	281	306	314	315	341	323	301	288	283	168	138	136
PEAK POW MW		362	356	356	356	356	350	319	297	288	286	294	319	339
ENERGY GWH	2046.8	129.4	208.9	220.6	233.8	234.7	245.4	240.6	108.2	48.3	54.4	125.1	103.0	94.4
--GAVINS POINT--														
NAT INFLOW	1545	250	186	178	137	115	111	120	59	28	31	100	100	130
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-5	-11	-24	-6	-2	0	-12	1	0	0	0	38	9	2
EVAPORATION	36				2	6	9	8	3	2	2	4		
REG INFLOW	22815	1476	2183	2321	2398	2411	2703	2767	1339	625	714	1537	1230	1112
RELEASE	22827	1488	2183	2321	2398	2398	2678	2767	1339	625	714	1537	1230	1150
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	35.5	39.0	39.0	39.0	45.0	45.0	45.0	45.0	45.0	25.0	20.0	20.0
POWER														
AVE POWER MW		86	113	114	114	114	115	116	116	116	116	88	71	70
PEAK POW MW		114	114	114	114	115	116	116	116	116	116	117	117	114
ENERGY GWH	817.0	61.9	84.0	82.1	84.8	85.1	82.9	86.2	41.7	19.5	22.3	65.3	52.5	48.7
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	3196	1279	700	350	250	150	110	86	42	19	22	56	40	92
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	25771	2745	2847	2640	2609	2512	2764	2842	1374	641	733	1580	1256	1228
KCFS		46.1	46.3	44.4	42.4	40.9	46.4	46.2	46.2	46.2	46.2	25.7	20.4	21.4
--TOTAL--														
NAT INFLOW	25326	4589	4024	5907	3513	1326	1155	1185	528	246	282	744	750	1077
DEPLETION	2548	102	610	1502	1105	295	-163	-63	-149	-69	-79	-209	-204	-130
CHAN STOR	-68	18	-83	-36	-2	0	-9	2	0	0	-1	65	-25	2
EVAPORATION	1825				115	361	446	380	168	78	88	189		
STORAGE	61720	63480	63965	65694	65376	63533	61633	59661	58795	58392	57931	57180	56853	56834
SYSTEM POWER														
AVE POWER MW		842	1336	1566	1628	1638	1724	1562	1533	1560	1671	1101	1104	1081
PEAK POW MW		2389	2397	2401	2394	2381	2370	2344	2312	2301	2293	2293	2314	2320
ENERGY GWH	11089.3	606.6	993.7	1127.7	1211.3	1218.9	1241.3	1162.0	551.8	262.1	320.8	819.4	821.3	752.2
DAILY GWH		20.2	32.1	37.6	39.1	39.3	41.4	37.5	36.8	37.4	40.1	26.4	26.5	25.9

VALUES IN 1000 AF EXCEPT AS INDICATED

	31MAR11		2011										2012
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	4814	434	742	1111	563	282	266	308	154	72	82	263	250	288
DEPLETION	408	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION	568				35	110	137	119	54	25	28	61		
MOD INFLOW	3838	396	547	706	309	171	237	279	124	58	66	282	319	343
RELEASE	5786	417	676	536	553	553	446	369	179	83	111	553	676	633
STOR CHANGE	-1948	-21	-129	170	-245	-382	-209	-90	-55	-25	-45	-272	-357	-290
STORAGE	15803	15782	15653	15824	15579	15197	14988	14899	14844	14819	14774	14502	14145	13855
ELEV FTMSL	2238.7	2238.6	2238.0	2238.8	2237.7	2235.9	2234.9	2234.5	2234.3	2234.1	2233.9	2232.6	2230.9	2229.4
DISCH KCFS	7.4	7.0	11.0	9.0	9.0	9.0	7.5	6.0	6.0	6.0	7.0	9.0	11.0	11.0
POWER														
AVE POWER MW		97	150	124	124	124	103	82	82	82	95	122	146	145
PEAK POW MW		166	165	166	165	164	163	163	162	162	162	161	160	159
ENERGY GWH	952.7	69.7	111.6	89.5	92.4	92.0	73.9	61.1	29.5	13.8	18.3	91.0	108.8	101.2
--GARRISON--														
NAT INFLOW	7002	998	813	1750	1168	483	362	418	159	74	85	198	209	285
DEPLETION	901	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR	-36	4	-39	19			15	15			-10	-20	-20	
EVAPORATION	660				41	129	160	137	61	28	32	69		
REG INFLOW	11191	1397	1340	1781	1187	796	770	644	369	172	203	714	888	930
RELEASE	13274	893	1199	1309	1353	1353	1147	1015	491	229	262	1168	1476	1381
STOR CHANGE	-2083	505	140	472	-166	-557	-377	-370	-122	-57	-59	-454	-588	-451
STORAGE	19049	19554	19694	20166	20000	19444	19067	18696	18575	18518	18459	18005	17417	16966
ELEV FTMSL	1840.5	1842.0	1842.4	1843.9	1843.4	1841.7	1840.5	1839.4	1839.0	1838.8	1838.6	1837.2	1835.2	1833.7
DISCH KCFS	21.8	15.0	19.5	22.0	22.0	22.0	19.3	16.5	16.5	16.5	16.5	19.0	24.0	24.0
POWER														
AVE POWER MW		190	248	281	282	280	244	208	207	207	207	237	295	292
PEAK POW MW		485	491	499	498	483	479	475	474	473	472	467	460	454
ENERGY GWH	2020.0	137.0	184.5	202.2	209.5	208.3	175.6	155.1	74.7	34.8	39.7	176.1	219.5	203.1
--OAHE--														
NAT INFLOW	1380	423	240	276	111	52	89	53	27	13	14		10	72
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-10	25	-16	-9			11	11				-10	-21	
EVAPORATION	620				41	124	150	127	57	26	30	65		
REG INFLOW	13393	1292	1352	1431	1250	1165	1069	962	460	215	246	1081	1447	1425
RELEASE	16824	1105	1776	1879	2072	2068	1835	1361	589	310	258	1099	1299	1172
STOR CHANGE	-3431	186	-425	-449	-822	-903	-766	-399	-128	-95	-13	-19	148	253
STORAGE	21093	21279	20854	20406	19584	18681	17915	17516	17388	17293	17280	17261	17409	17662
ELEV FTMSL	1614.3	1614.9	1613.6	1612.3	1609.9	1607.0	1604.5	1603.1	1602.7	1602.4	1602.3	1602.3	1602.8	1603.6
DISCH KCFS	13.9	18.6	28.9	31.6	33.7	33.6	30.8	22.1	19.8	22.3	16.3	17.9	21.1	20.4
POWER														
AVE POWER MW		249	385	418	441	435	393	280	249	280	205	225	266	257
PEAK POW MW		746	740	733	720	705	692	685	682	681	680	680	683	687
ENERGY GWH	2629.8	179.2	286.5	301.0	328.4	323.4	283.1	208.4	89.7	47.1	39.3	167.2	197.5	178.9
--BIG BEND--														
EVAPORATION	129				8	24	31	27	12	6	7	14		
REG INFLOW	16695	1105	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
RELEASE	16725	1135	1776	1879	2064	2044	1804	1334	576	304	252	1085	1299	1172
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	19.1	28.9	31.6	33.6	33.2	30.3	21.7	19.4	21.9	15.9	17.6	21.1	20.4
POWER														
AVE POWER MW		88	135	148	157	156	144	106	97	110	80	89	104	98
PEAK POW MW		495	509	509	509	517	538	538	538	538	538	538	538	529
ENERGY GWH	965.6	63.4	100.6	106.4	116.9	115.7	103.4	79.1	35.0	18.5	15.4	66.1	77.1	68.0
--FORT RANDALL--														
NAT INFLOW	487	135	88	91	34	31	30	4	3	1	1	10	20	39
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146				10	32	39	31	12	5	5	12		
REG INFLOW	16988	1266	1855	1958	2070	2028	1788	1306	565	300	248	1080	1316	1208
RELEASE	17637	1331	2011	1958	2070	2028	1934	1949	887	416	274	978	966	834
STOR CHANGE	-649	-65	-156		0	0	-146	-643	-322	-116	-26	102	350	374
STORAGE	3770	3705	3549	3549	3549	3549	3402	2759	2437	2321	2295	2397	2747	3121
ELEV FTMSL	1357.7	1357.0	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1337.9	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	22.4	32.7	32.9	33.7	33.0	32.5	31.7	29.8	30.0	17.3	15.9	15.7	14.5
POWER														
AVE POWER MW		193	277	277	283	277	271	254	225	219	126	117	119	115
PEAK POW MW		362	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1742.5	138.6	206.1	199.2	210.4	206.3	195.4	188.7	81.0	36.8	24.1	86.8	88.7	80.3
--GAVINS POINT--														
NAT INFLOW	1099	163	112	107	82	92	89	96	47	22	25	80	80	104
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	0	-14	-20	0	-1	1	1	1	3	0	24	3	0	2
EVAPORATION	45				3	8	11	10	4	2	2	5		
REG INFLOW	18577	1476	2084	2041	2109	2104	2018	2035	928	433	317	1045	1045	940
RELEASE	18589	1488	2084	2041	2109	2091	1993	2035	928	433	317	1045	1045	978
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	25.0	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.0	17.0	17.0	17.0
POWER														
AVE POWER MW		86	110	111	111	110	111	111	107	107	71	60	60	60
PEAK POW MW		114	114	114	114	115	117	117	117	117	117	117	117	114
ENERGY GWH	750.4	61.9	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	44.7	44.7	41.5
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	2104	831	420	210	150	120	87	69	33	15	18	45	32	74
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	20441	2297	2468	2220	2220	2175	2056	2093	955	446	332	1077	1063	1038
KCFS		38.6	40.1	37.3	36.1	35.4	34.6	34.0	32.1	32.1	20.9	17.5	17.3	18.0
--TOTAL--														
NAT INFLOW	16886	2984	2415	3545	2108	1060	923	948	422	197	225	596	601	862
DEPLETION	2385	139	441	1141	981	289	-161	-66	-104	-49	-55	-94	-55	-22
CHAN STOR	-46	15	-75	10	-1	1	26	28	3	0	14	-28	-41	2
EVAPORATION	2167				138	427	527	451	200	92	105	227		
STORAGE	61720	62283	61714	61908	60676	58846	57374	55871	55245	54952	54809	54167	53719	53568
SYSTEM POWER														
AVE POWER MW		903	1305	1358	1398	1382	1266	1041	968	1005	783	849	990	967
PEAK POW MW		2369	2376	2377	2363	2332	2318	2296	2269	2258	2255	2256	2276	2282
ENERGY GWH	9061.0	649.8	970.9	977.8	1039.8	1027.9	911.2	774.8	348.3	168.8	150.4	631.9	736.4	673.0
DAILY GWH		21.7	31.3	32.6	33.5	33.2	30.4	25.0	23.2	24.1	18.8	20.4	23.8	23.2

VALUES IN 1000 AF EXCEPT AS INDICATED

	31MAR11		2011										2012
	INI-SUM	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--														
NAT INFLOW	9496	1022	1592	2726	1208	424	400	462	231	108	123	395	374	432
DEPLETION	240	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105
EVAPORATION	338				23	73	91	77	18	8	9	38		
MOD INFLOW	8918	1045	1332	2213	981	413	438	474	243	113	130	480	520	537
RELEASE	9931	476	922	833	1076	1107	1070	1107	536	250	270	738	799	748
STOR CHANGE	-1013	569	410	1380	-95	-694	-632	-633	-293	-137	-140	-258	-279	-211
STORAGE	15803	16372	16782	18162	18066	17372	16740	16108	15815	15678	15538	15280	15000	14790
ELEV FTMSL	2238.7	2241.2	2243.0	2248.7	2248.4	2245.5	2242.8	2240.1	2238.7	2238.1	2237.5	2236.3	2235.0	2234.0
DISCH KCFS	7.4	8.0	15.0	14.0	17.5	18.0	18.0	18.0	18.0	18.0	17.0	12.0	13.0	13.0
POWER														
AVE POWER MW		111	168	171	172	171	169	167	166	165	165	161	163	163
PEAK POW MW		168	169	173	172	170	168	166	165	165	164	164	163	162
ENERGY GWH	1302.7	79.9	124.9	122.9	128.2	127.3	121.8	124.3	59.6	27.7	31.6	119.7	121.5	113.1
--GARRISON--														
NAT INFLOW	13940	1793	1792	4384	2562	725	542	628	239	112	127	296	313	427
DEPLETION	988	18	100	802	621	93	-133		-118	-55	-63	-117	-96	-64
CHAN STOR	-53	-6	-68	10	-33	-5	0	0			10	49	-10	
EVAPORATION	386				27	84	103	88	20	9	11	44		
REG INFLOW	22444	2245	2547	4425	2958	1650	1642	1647	872	407	459	1156	1199	1239
RELEASE	23382	1517	2460	2380	2460	2460	2383	2460	1190	555	595	1353	1845	1726
STOR CHANGE	-937	728	87	2045	498	-809	-740	-813	-318	-148	-136	-197	-646	-487
STORAGE	19049	19777	19864	21908	22406	21597	20857	20044	19726	19578	19442	19245	18599	18112
ELEV FTMSL	1840.5	1842.7	1843.0	1848.8	1850.2	1848.0	1845.9	1843.5	1842.5	1842.1	1841.7	1841.1	1839.1	1837.5
DISCH KCFS	21.8	25.5	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	37.5	22.0	30.0	30.0
POWER														
AVE POWER MW		323	489	500	503	503	501	496	489	486	461	278	377	373
PEAK POW MW		495	498	503	504	502	500	498	492	487	483	481	474	468
ENERGY GWH	3526.8	232.3	363.5	360.2	374.3	374.1	360.8	368.7	176.2	81.7	88.4	207.1	280.3	259.3
--OAHE--														
NAT INFLOW	2907	837	560	752	266	78	133	79	40	19	21		14	108
DEPLETION	632	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-26	-14	-52				0	0			10	62	-32	
EVAPORATION	371				26	81	99	84	20	9	10	42		
REG INFLOW	25260	2292	2897	2987	2526	2340	2389	2465	1209	564	615	1361	1808	1806
RELEASE	27517	1409	2906	2731	3288	3129	3291	2908	1390	682	887	1722	1672	1502
STOR CHANGE	-2257	883	-9	256	-762	-789	-902	-443	-180	-118	-272	-362	137	304
STORAGE	21093	21976	21967	22223	21461	20672	19769	19326	19146	19028	18757	18395	18532	18836
ELEV FTMSL	1614.3	1616.8	1616.8	1617.5	1615.4	1613.1	1610.4	1609.1	1608.5	1608.1	1607.3	1606.1	1606.5	1607.5
DISCH KCFS	13.9	23.7	47.3	45.9	53.5	50.9	55.3	47.3	46.7	49.1	55.9	28.0	27.2	26.1
POWER														
AVE POWER MW		318	633	617	703	665	702	611	602	625	691	359	348	336
PEAK POW MW		756	756	760	749	737	723	716	713	711	707	700	703	708
ENERGY GWH	4336.8	229.1	471.2	444.5	523.0	495.1	505.2	454.6	216.5	105.0	132.6	267.3	259.0	233.7
--BIG BEND--														
EVAPORATION	71				5	15	19	16	4	2	2	9		
REG INFLOW	27447	1409	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
RELEASE	27477	1439	2906	2731	3284	3115	3272	2892	1386	680	885	1714	1672	1502
STORAGE	1651	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.5	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.2	24.2	47.3	45.9	53.4	50.7	55.0	47.0	46.6	49.0	55.8	27.9	27.2	26.1
POWER														
AVE POWER MW		110	202	196	236	237	260	228	230	241	274	139	133	125
PEAK POW MW		486	440	440	464	509	517	538	538	538	538	538	538	529
ENERGY GWH	1544.3	79.5	150.2	141.2	175.6	176.1	187.0	169.4	82.7	40.6	52.5	103.6	98.9	87.0
--FORT RANDALL--														
NAT INFLOW	968	230	206	243	80	47	46	6	4	2	2	14	30	59
DEPLETION	77	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	82				6	19	24	18	4	2	2	7		
REG INFLOW	28288	1665	3103	2962	3339	3127	3288	2878	1385	680	884	1721	1699	1558
RELEASE	28936	1642	2743	2962	3521	3549	3434	3522	1706	796	910	1619	1349	1184
STOR CHANGE	-648	23	360		-182	-422	-146	-643	-321	-116	-26	102	350	374
STORAGE	3770	3793	4153	4153	3971	3549	3403	2759	2438	2322	2296	2398	2748	3122
ELEV FTMSL	1357.7	1358.0	1362.0	1362.0	1360.0	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.1	27.6	44.6	49.8	57.3	57.7	57.7	57.3	57.3	57.3	57.3	26.3	21.9	20.6
POWER														
AVE POWER MW		238	361	375	374	362	352	335	305	289	284	192	166	163
PEAK POW MW		365	375	375	370	354	349	317	294	285	283	293	319	339
ENERGY GWH	2352.3	171.1	268.6	270.0	278.1	269.7	253.1	249.0	110.0	48.6	54.5	142.8	123.3	113.6
--GAVINS POINT--														
NAT INFLOW	1969	279	260	285	192	138	133	144	71	33	38	120	120	156
DEPLETION	115	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-13	-24	-33	-10	-14	-1	0	1	0	0	0	57	8	2
EVAPORATION	24				2	5	6	6	1	1	1	3		
REG INFLOW	30753	1892	2951	3213	3659	3672	3566	3659	1770	826	944	1783	1476	1343
RELEASE	30765	1904	2951	3213	3659	3659	3541	3659	1770	826	944	1783	1476	1381
STOR CHANGE	-12	-12				13	25							-38
STORAGE	354	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.5	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	32.0	48.0	54.0	59.5	59.5	59.5	59.5	59.5	59.5	59.5	29.0	24.0	24.0
POWER														
AVE POWER MW		106	112	111	110	111	113	115	115	115	115	101	84	83
PEAK POW MW		114	112	111	110	112	115	115	115	115	115	117	117	114
ENERGY GWH	849.3	76.3	83.5	79.9	81.7	82.4	81.6	85.2	41.2	19.2	22.0	75.3	62.7	58.1
--GAVINS POINT - SIOUX CITY--														
NAT INFLOW	4014	1524	840	560	350	180	132	103	50	23	27	67	48	110
DEPLETION	252	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY														
KAF	34527	3406	3755	3742	3970	3803	3649	3751	1814	847	968	1837	1510	1477
KCFS		57.2	61.1	62.9	64.6	61.8	61.3	61.0	61.0	61.0	61.0	29.9	24.6	25.7
--TOTAL--														
NAT INFLOW	33294	5685	5250	8950	4658	1592	1386	1422	634	296	338	892	899	1292
DEPLETION	2304	75	495	1527	1094	208	-208	-85	-135	-63	-72	-202	-206	-124
CHAN STOR	-89	-43	-152	0	-47	-6	0	1	0	0	19	171	-34	2
EVAPORATION	1272				89	277	341	289	67	31	35	143		
STORAGE	61720	63881	64728	68409	67867	65166	62770	60238	59126	58607	58034	57319	56880	56822
SYSTEM POWER														
AVE POWER MW		1206	1965	1971	2098	2049	2097	1951	1906	1922	1988	1231	1271	1242
PEAK POW MW		2384	2350	2361	2369	2385	2372	2350	2317	2300	2289	2293	2313	2320
ENERGY GWH	13912.3	868.2	1461.9	1418.8	1561.1	1524.7	1509.5	1451.2	686.3	322.9	381.6	915.7	945.7	864.8
DAILY GWH		28.9	47.2	47.3	50.4	49.2	50.3	46.8	45.8	46.1	47.7	29.5	30.5	29.8

[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Tuesday, April 05, 2011 12:31 PM
To: Farmer, Monique L NWO
Subject: Press release (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Monique - I know you're working on the draft press release, but I wanted to offer my thoughts on the lead since I wasn't too articulate yesterday.

I think the lead should be something along the line of it's going to be another high water year in the Missouri Basin, we already have 5.5 MAF of flood waters stored in the system and more on its way due to melt of the remainder of the plains snowpack and above normal mountain snowpack. And as such, we are beginning to evacuate flood waters at a rate of 10,000 cfs above full service navigation (roughly 2 feet above normal on the lower river) and as a result the spring pulse planned for May will not be implemented.

These are just my thought - I'm sure you can arrange them into coherent sentences the public will understand!

Thanks,
Jody

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Wednesday, April 06, 2011 3:58 PM
To: Engemann, Daniel
Subject: RE: Gavins Point May Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

No, December is the correct month. We try to evacuate for the longest period of time at the lowest possible rate to reduce the risk of downstream flood damages. We will be on this higher than normal release schedule through early December.

Jody

-----Original Message-----
From: Engemann, Daniel [mailto:Dan.Engemann@mail.house.gov]
Sent: Wednesday, April 06, 2011 3:35 PM
To: Farhat, Jody S NWD02
Subject: RE: Gavins Point May Spring Pulse Update (UNCLASSIFIED)

Jody,

Question on the floodwater evacuation - you said should last through early December. I'm sure you meant another month. Can you clarify?

Thanks,
Dan Engemann
Office of Congressman Blaine Luetkemeyer
636-239-2276

-----Original Message-----
From: Farhat, Jody S NWD02 [mailto:Jody.S.Farhat@usace.army.mil]
Sent: Wednesday, April 06, 2011 1:58 PM
To: Farhat, Jody S NWD02; aaron popelka@moran.senate.gov; Adams, Steve; Feyerherm, Alan; Anderson, G Witt NWD; Mick, Ansley; [redacted] NWD; [redacted] NWO; Blechinger, Erik T NWO; brian klippenstein@blunt.senate.gov; brianne dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; Ramey, Chad; Charlie Scott; Brown, Chris; Mahoney, Christina; Cindy Hall@mccaskill.senate.gov; Brainard, Colin; [redacted] NWK; corey dukes@mccaskill.senate.gov; d schwietert@thune.senate.gov; Engemann, Daniel; Curls, Darwin; dayle williamson@bennelson.senate.gov; Mathisen, Dean; VanMatre, Deb; [redacted] NWD02; don canton@hoeven.senate.gov; [redacted] NWO; Elfmann, Edwin; Engelhardt, Bruce W.; Bierwagen, Eric; Bohl, Eric; erick lutt@bennelson.senate.gov; Farmer, Monique L NWO; [redacted] NWK; [redacted] HQ; Garland.Erbele@state.sd.us; Marble, Gary; Gaul, Steve; [redacted] NWK; [redacted] HQ02; [redacted] NWD02; [redacted] NWD02; harold stones@roberts.senate.gov; Henry Maddux; Hofmann, Anthony J COL NWK; [redacted] NWK; Worsham, Janna; Jenny Frazier; Mitas, Jim; Jim.Riis@state.sd.us; John Drew; Karen Rouse; Kopocis, Ken; [redacted] NWK; [redacted] NWD02; [redacted] NWK; [redacted] NWO; [redacted] NWD02; Mark.Rath@state.sd.us; marty boeckel@conrad.senate.gov; [redacted] NWO; McMahon, John R BG NWD; Roe, Melissa; mike.hayden@outdoorks.com; Matousek, Mike; nathan taylor@tester.senate.gov; nathan vanderplaats@harkin.senate.gov; nichole distefano@mccaskill.senate.gov; Carroll, Patrick; patrick lehman@johanns.senate.gov; [redacted] NWO; [redacted] NWK; peter henry@blunt.senate.gov; phil erdman@johanns.senate.gov; [redacted] NWD; Vogel, Randy; [redacted] NWO; Henkle, Richard; richard bender@harkin.senate.gov; Ruch, Robert J

COL NWO; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO; Corrie, Scott; Seeronen, John R NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov; sherry_kuntz@grassley.senate.gov; [redacted] NWK; [redacted] HQDA; [redacted] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; [redacted] NWO; [redacted] NWD02; [redacted] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; Brincks, Wayne; Wayne_NelsonStastny@fws.gov; Wells, Mike MVS External Stakeholder; Westrup, Nathan; zach_nelson@bennelson.senate.gov; Karen Rouse; [redacted]@usace.army.mil
Subject: Gavins Point May Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All - This is lining up to be another very high runoff year in the Missouri River basin. Over 5.5 million acre feet of floodwater is already stored in the reservoir system and more is on its way due to the melt of the remainder of the plains snowpack and above normal mountain snowpack. As a result we have started to evacuate floodwater at a rate of 10,000 cfs above full service navigation flows. The flood water evacuation is expected to last through early December. The increased releases will result in stages roughly 2 feet above normal in the lower Missouri River basin, but well within the channel.

The higher releases will also prevent implementation of the May spring pulse from Gavins Point Dam to benefit the endangered pallid sturgeon. Flows at Omaha and Nebraska City will be above the flow limits due to the higher releases, essentially closing the window of opportunity to run the spring pulse. The downstream flow limits are safeguards to reduce or eliminate the pulse to ensure that it does not cause flooding of agricultural land along the river during the pulse.

Call or email if you have questions.

Regards,
Jody

Jody Farhat, P.E.
Chief, Missouri River Basin Water Management

jody.s.farhat@usace.army.mil
Office: 402-996-3840

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: Farmer, Monique L NWO
Sent: Wednesday, April 06, 2011 5:08 PM
To: Farhat, Jody S NWD02
Subject: FW: Corps cancels May spring pulse, prepares for Annual Operating Plan meetings (UNCLASSIFIED)
Attachments: USACE Mainstem Dam System 201103 newsbrief B.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Went out this afternoon just in case you did not see it come through VOCUS.

-----Original Message-----
From: U.S. Army Corps of Engineers, Northwestern Division [mailto:pradmin@vocus.com]
Sent: Wednesday, April 06, 2011 4:57 PM
To: Farmer, Monique L NWO
Subject: Corps cancels May spring pulse, prepares for Annual Operating Plan meetings

<http://us.vocuspr.com/Publish/520028/vcsPRAsset_520028_348656_c5220867-6ce9-45c0-83c2-dfd9e54e58a1_0_USACE_LOGO_small.jpg>

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NEWS RELEASE

FOR IMMEDIATE RELEASE
Contacts - Monique Farmer (402) 995-2420 Jody Farhat (402) 996-3840

OMAHA, Neb.- Runoff from snow and ice that accumulated during the winter months brought more than double the normal volume of runoff into the Missouri River reservoirs during the month of March, prompting the Corps to begin evacuating surplus water from the system.

"We currently have more than 5.5 million acre feet of floodwater stored in the reservoir system and more on its way due to the melt of the remainder of the plains snowpack and above normal mountain snowpack," said Jody Farhat, Chief of the Water Management Division here. "We have started to evacuate floodwater by increasing releases as tributary flows decline. The increased releases will result in stages roughly 2 feet above normal in the lower Missouri River basin, but well within the channel."

Evacuation of stored floodwater will continue through early December. The higher releases will also prevent implementation of the May spring pulse from Gavins Point Dam to benefit the endangered pallid sturgeon. Flows at Omaha and Nebraska City will be above the flow limits due to the higher releases, essentially closing the window of opportunity to run the spring pulse. The downstream flow limits are safeguards to reduce or eliminate the pulse to ensure that it does not cause flooding of agricultural land along the river during the pulse.

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Runoff for 2011 is forecast to total 33.8 MAF, 136 percent of normal. The 2010 total was 38.8 MAF, 156 percent of normal.

During any flood response activities throughout the basin, the Omaha District will provide regular updates directly to the public via its Facebook (www.facebook.com/OmahaUSACE) and Twitter accounts (www.twitter.com/OmahaUSACE).

Missouri River Annual Operating Plan Meetings

A series of six public meetings will take place from April 12-14 to review the 2011 Annual Operating Plan for the Missouri River main stem reservoir system.

There will be presentations on river and reservoir operations that took place this winter, as well as planned operations for the remainder of the year. The meetings will also provide an opportunity for people to ask questions and make comments.

The meeting schedule is as follows:

April 12

* Nebraska City, Neb. at 11 a.m., Lewis & Clark Center, 100 Valmont Drive
* Fort Peck, Mont. at 7 p.m., Fort Peck Interpretative Center, Lower Yellowstone Road

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* Bismarck, N.D., 1 p.m., Radisson Hotel, 605 E. Broadway Ave.
* Pierre, S.D., 7 p.m., Ramkota Hotel, 920 West Sioux Ave.

April 14

* Jefferson City, Mo., 1 p.m., Hampton Inn at Capital Mall, 4800 Country Club Drive,
* Kansas City, Mo., 7 p.m. meeting at, Hilton at KCI, 8801 NW 112th Street

Gavins Point releases averaged 21,000 during the month of March. The long-term average for Gavins during this time of year is 19,600. Releases are forecasted to average 25,000 for April. The reservoir will remain near its current elevation of 1206 during April.

Fort Randall reservoir rose 7.2 feet in March, ending the month near elevation 1358. It is expected to drop slightly in April, ending the month near elevation 1357 feet. It is currently 3.3 feet lower than it was last year at this time.

Big Bend reservoir will remain in its normal range of 1420 to 1421 feet. Releases will be adjusted to meet hydropower needs.

Oahe reservoir rose 6.7 feet in March, ending the month at 1614.4 feet. It is expected to climb nearly 2 feet in April, ending the month near elevation 1616. The reservoir's elevation is 0.5 feet higher than it was last year at this time. Oahe releases averaged 13,900 cfs in March.

Garrison reservoir rose 2 feet in March, ending the month at elevation 1840.5. The reservoir will climb more than 3 feet this month ending April near elevation 1844. The reservoir is 2.2 feet higher than it was a year ago at this time. Garrison releases were lowered from 26,000 cfs to 15,000 cfs during March. Releases will remain near 15,000 during the month of April.

Fort Peck rose by 2.9 feet in March, ending the month at elevation 2239.7. It is expected to increase by 1 foot in April, ending the month near elevation 2240. The reservoir is currently 14.5 feet higher than it was a year ago at this time. Fort Peck releases were lowered from 9,000 cfs to 7,000 cfs during March, and will remain at 7,000 cfs during April.

The six main stem power plants generated 630 million kilowatt hours (kWh) of electricity in March. Power plant generation for the month of March was near normal. The total energy production forecast for 2011 anticipates above average production at 11.5 billion kWh. The long-term average is approximately 10 billion kWh.

View daily and forecasted reservoir and river information on the Water Management section of the Northwestern Division homepage at: http://www.nwd-mr.usace.army.mil/rcc.

Other links of interest:

1. http://www.nwo.usace.army.mil/html/op-e/flood.html
2. www.facebook.com/OmahaUSACE
3. www.twitter.com/OmahaUSACE
4. www.mraps.org <http://www.mraps.org/>
5. www.moriverrecovery.org <http://www.moriverrecovery.org/>

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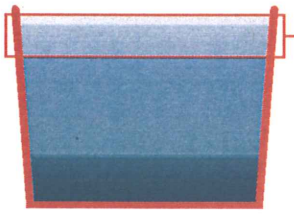
U.S. ARMY CORPS OF ENGINEERS - NORTHWESTERN DIVISION 1616 Capitol Ave., Ste. 9000
http://www.nwo.usace.army.mil/ <http://usacearmy.pr-optout.com/Url.aspx?520028x333138x545484>
Find us on Facebook at facebook.com/OmahaUSACE <http://usacearmy.pr-optout.com/Url.aspx?520028x333137x27146> and on Twitter at twitter.com/OmahaUSACE <http://usacearmy.pr-optout.com/Url.aspx?520028x333136x361972>

<http://us.vocuspr.com/Url.aspx?520028x333145x761158> Like us on Facebook <http://www.facebook.com/OmahaUSACE> Follow OmahaUSACE <http://www.twitter.com/OmahaUSACE>

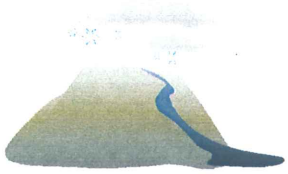
Missouri River Mainstem Reservoir System

Flood Control Storage Capacity

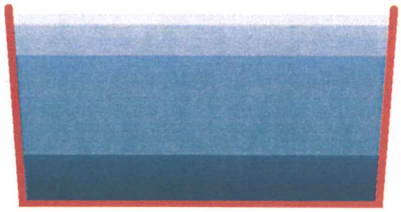


Fort Peck: 22.6% of Total Flood Storage (3,675,000 Acre-Feet)

The reservoirs are to scale and represent the relative size of the **total flood control storage (annual + exclusive)** at the six Missouri River mainstem projects.

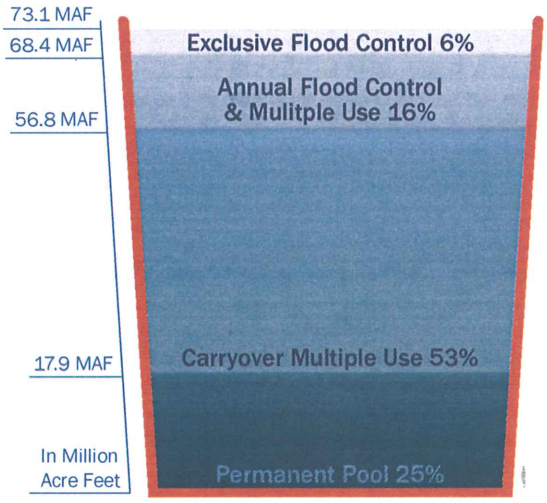


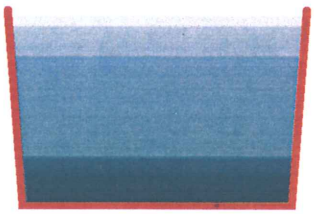
Mountain Snowmelt



Garrison: 35.1% TFS (5,711,000 Ac-Ft)

System Storage Zones & Allocations of the Total Flood Storage Capacity





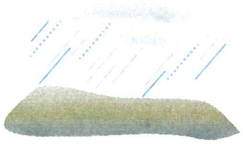
Oahe: 26.5% TFS (4,303,000 Ac-Ft)

Big Bend: 1.1% TFS (177,000 Ac-Ft)

Plains Snowmelt

Types of Missouri River Basin Runoff

Fort Randall: 14.1% TFS (2,294,000 Ac-Ft)



Rainfall

Gavins Point: 0.7% TFS (108,000 Ac-Ft)

[redacted] NWO

From: [redacted] NWD
Sent: Wednesday, April 13, 2011 4:30 PM
To: Farhat, Jody S NWD02
Cc: CENWO-EOC NWO
Subject: long-term hydrologic forecast for James river? (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Nevermind - I think the AHPS forecasts will work for this requirement. They aren't looking as far out as I thought they were.

Classification: UNCLASSIFIED
Caveats: NONE

Hi Jody/NWO:

I'm in Bismarck ND supporting the state and FEMA during the floods.

FEMA is wanting to conduct a risk/threat analysis - I think they are trying to look out 1-2 weeks and see what communities might be experiencing flooding. My understanding is that the Omaha-portion of ND is in decent shape.

However, are there longer-term hydrologic forecasts for the area that includes how we operate our projects?

[redacted]
US Army Corps of Engineers
Northwestern Division - Portland
Civil Emergency Planner
Cell: [redacted]
Office: [redacted]

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]NWO

From: [redacted] NWD
Sent: Wednesday, April 13, 2011 2:25 PM
To: Farhat, Jody S NWD02
Cc: CENWO-EOC NWO
Subject: long-term hydrologic forecast for James river? (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

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[redacted]
US Army Corps of Engineers
Northwestern Division - Portland
Civil Emergency Planner
Cell: [redacted]
Office: [redacted]

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWO
Sent: Tuesday, April 12, 2011 4:07 PM
To: Farhat, Jody S NWD02
Subject: Offutt Lake Levels (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody, I was referred to you by a co-worker. My question concerns MO River elevations through the Aug-Nov2011 timeframe. We have a contractor cleaning the soil on a skeet range in the vicinity of the Base lake, and when the lake is high it backs up into a drainage ditch that goes through the middle of the skeet range. I understand that the lake responds almost immediately to MO River elevations. Could you tell me who I need to talk to who would be able to tell me:

1. At what elevation does the Base Lake over flow and flood the skeet range, or more importantly what Mo. river elevation causes this event to occur.
2. Is there an immediate hydraulic relationship between the Base Lake and the Mo. river elevations.
3. What are the expected River Elevations adjacent to Offutt Base projected throughout the summer?

Answers to these are important as the contractor will have to incur more costs to deal with either damning and diverting the flow through the ditch that runs through the skeet range or remob at a time when the ditch dries up. The contractor will be working the entire month of Aug2011.

Thanks

[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: Michael Gunsch [mgunsch@houstoneng.com]
Sent: Tuesday, April 12, 2011 7:41 AM
To: Farhat, Jody S NWD02; [redacted] NWO; [redacted] NWD02; Craig Odenbach
Cc: [redacted] NWO; Gailen Narum (gailen.narum@narumfamily.com); Fleck Terry (tfleck@attitudedr.com); Cary Backstrand; Swenson, Michael A NWD02
Subject: Missouri River Releases

Jodi:

The Burleigh County Water Resource District is planning to conduct an aerial reconnaissance of the tree snags in the Missouri River below the Heart River Confluence this spring. This fly over will be compared to a previous inventory that occurred after the 2009 flood. The COE predicted that many of these tree snags would move through on their own over time. Given the high flows this winter and spring there may have been changes, which the BCWRD would like to document before proceeding with the completion of an Environmental Assessment related to the possible removal of some of these trees. This EA has been discussed with the Bismarck Regulatory Office.

The concern we have in conducting this aerial survey are the current high flows and releases. During high flows many of these trees may be below the water line along the edges of the sandbars and more difficult to inventory and remove. Looking at the projected flow releases the COE appears to be planning to increase the Garrison releases shortly after the downstream flows recede. What we would like to know is when the low point in flows at Bismarck is projected to occur. At that time we can coordinate our aerial survey too obtain the best results. We also would like to know what those flows might be.

Your assistance is appreciated. As I am unable to attend the AOP meeting in Bismarck this week, Terry Fleck will be visiting with you regarding this topic and coordination on this effort.

Thanks,

Michael H. Gunsch, PE, Principal / Project Manager

3712 Lockport Street
Bismarck, ND 58503
Phone (701) 323-0200
Cell (701) 527-2134
Fax (701) 323-0300
e-mail mgunsch@houstoneng.com<mailto:mgunsch@houstoneng.com>

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NEWS RELEASE

For Immediate Release: July 2, 2011

Contact: Monique Farmer - (402) 995-2420
monique.l.farmer@usace.army.mil

Jody Farhat – (402) 996-3840

Corps cancels May spring pulse, announces Annual Operating Plan meetings

OMAHA, Neb. – Runoff from snow and ice that accumulated during the winter months brought more than double the normal volume of runoff into the Missouri River reservoirs during the month of March, prompting the Corps to begin evacuating surplus water from the system.

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-more-

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Other links of interest:

- http://www.nwo.usace.army.mil/html/op-e/flood.html
- www.facebook.com/OmahaUSACE
- www.twitter.com/OmahaUSACE
- www.mraps.org
- www.moriverrecovery.org

MISSOURI RIVER MAIN STEM RESERVOIR DATA

	Pool Elevation (ft msl)		Water in Storage - 1,000 acre-feet		
	On March 31	Change in March	On March 31	% of 1967-2010 Average	Change in March
Fort Peck	2238.7	+2.9	15,803	113	+627
Garrison	1840.5	+2.0	19,049	113	+631
Oahe	1614.4	+6.7	21,093	118	+2,216
Big Bend	1420.5	-0.2	1,651	96	-11
Fort Randall	1357.8	+7.2	3,770	100	+602
Gavins Point	1206.5	+1.0	354	96	+24
			61,720	113	+4,089

-more-

WATER RELEASES AND ENERGY GENERATION FOR MARCH

	Average Release in 1,000 cfs	Releases in 1,000 af	Generation in 1,000 MWh
Fort Peck	7.4	455	73
Garrison	21.8	1,342	204
Oahe	13.9	853	134
Big Bend	17.2	1,058	63
Fort Randall	15.1	927	99
Gavins Point	21.0	1,291	57
			630

###

[redacted] NWO

From: Sam Johnson [redacted]
Sent: Wednesday, April 06, 2011 5:40 PM
To: Farhat, Jody S NWD02
Subject: spring rise

THANK YOU JODY !

Your management has been the best ever.

Sam Johnson
Brunswick ,MO bottom land farmer, some of the most productive land in the world, if we can keep the water off , and have internal drainage.

[redacted] NWO

From: Engemann, Daniel [Dan.Engemann@mail.house.gov]
Sent: Wednesday, April 06, 2011 5:08 PM
To: Farhat, Jody S NWD02
Subject: Re: Gavins Point May Spring Pulse Update (UNCLASSIFIED)

Ok, thanks.
Dan

----- Original Message -----
From: Farhat, Jody S NWD02 [mailto:Jody.S.Farhat@usace.army.mil]
Sent: Wednesday, April 06, 2011 04:57 PM
To: Engemann, Daniel
Subject: RE: Gavins Point May Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

No, December is the correct month. We try to evacuate for the longest period of time at the lowest possible rate to reduce the risk of downstream flood damages. We will be on this higher than normal release schedule through early December.

Jody

-----Original Message-----
From: Engemann, Daniel [mailto:Dan.Engemann@mail.house.gov]
Sent: Wednesday, April 06, 2011 3:35 PM
To: Farhat, Jody S NWD02
Subject: RE: Gavins Point May Spring Pulse Update (UNCLASSIFIED)

Jody,

Question on the floodwater evacuation - you said should last through early December. I'm sure you meant another month. Can you clarify?

Thanks,
Dan Engemann
Office of Congressman Blaine Luetkemeyer
636-239-2276

-----Original Message-----
From: Farhat, Jody S NWD02 [mailto:Jody.S.Farhat@usace.army.mil]
Sent: Wednesday, April 06, 2011 1:58 PM
To: Farhat, Jody S NWD02; aaron_popelka@moran.senate.gov; Adams, Steve; Feyerherm, Alan; Anderson, G Witt NWD; Mick, Ansley; [redacted] NWD; [redacted] NWO; Blechinger, Erik T NWO; brian_klippenstein@blunt.senate.gov; brianne_dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; Ramey, Chad; Charlie Scott; Brown, Chris; Mahoney, Christina; Cindy_Hall@mccaskill.senate.gov; Brainard, Colin; [redacted] NWK; corey_dukes@mccaskill.senate.gov; d_schwietert@thune.senate.gov; Engemann, Daniel; Curls, Darwin; dayle_williamson@bennelson.senate.gov; Mathisen, Dean; VanMatre, Deb; [redacted] NWD02; don_canton@hoeven.senate.gov; [redacted] NWO; Elfmann, Edwin; Engelhardt, Bruce W.; Bierwagen, Eric; Bohl, Eric; erick_lutt@bennelson.senate.gov; Farmer, Monique L NWO; [redacted] NWK; [redacted] HQ; Garland.Erbele@state.sd.us; Marble, Gary; Gaul, Steve; [redacted] NWK; [redacted] HQ02; [redacted] NWD02; [redacted] NWD02; harold_stones@roberts.senate.gov;

Henry Maddux; Hofmann, Anthony J COL NWK; [redacted] NWK; Worsham, Janna; Jenny Frazier; Mitas, Jim; Jim.Riis@state.sd.us; John Drew; Karen Rouse; Kopocis, Ken; Kneuvean, Eugene J NWK; [redacted] NWD02; [redacted] NWK; [redacted] NWO; [redacted] NWD02; Mark.Rath@state.sd.us; marty_boeckel@conrad.senate.gov; [redacted] NWO; McMahon, John R BG NWD; Roe, Melissa; mike.hayden@outdoorks.com; Matousek, Mike; nathan_taylor@tester.senate.gov; nathan_vanderplaats@harkin.senate.gov; nichole_distefano@mccaskill.senate.gov; Carroll, Patrick; patrick_lehman@johanns.senate.gov; [redacted] NWO; [redacted] NWK; peter_henry@blunt.senate.gov; phil_erdman@johanns.senate.gov; [redacted] NWD; Vogel, Randy; [redacted] NWO; Henkle, Richard; richard_bender@harkin.senate.gov; Ruch, Robert J COL NWO; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO; Corrie, Scott; [redacted] NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov; sherry_kuntz@grassley.senate.gov; [redacted] NWK; [redacted] HQDA; [redacted] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; [redacted] NWO; [redacted] NWD02; [redacted] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; Brincks, Wayne; Wayne_NelsonStastny@fws.gov; [redacted] MVS External Stakeholder; Westrup, Nathan; zach_nelson@bennelson.senate.gov; Karen Rouse; [redacted]@usace.army.mil
Subject: Gavins Point May Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All - This is lining up to be another very high runoff year in the Missouri River basin. Over 5.5 million acre feet of floodwater is already stored in the reservoir system and more is on its way due to the melt of the remainder of the plains snowpack and above normal mountain snowpack. As a result we have started to evacuate floodwater at a rate of 10,000 cfs above full service navigation flows. The flood water evacuation is expected to last through early December. The increased releases will result in stages roughly 2 feet above normal in the lower Missouri River basin, but well within the channel.

The higher releases will also prevent implementation of the May spring pulse from Gavins Point Dam to benefit the endangered pallid sturgeon. Flows at Omaha and Nebraska City will be above the flow limits due to the higher releases, essentially closing the window of opportunity to run the spring pulse. The downstream flow limits are safeguards to reduce or eliminate the pulse to ensure that it does not cause flooding of agricultural land along the river during the pulse.

Call or email if you have questions.

Regards,
Jody

Jody Farhat, P.E.
Chief, Missouri River Basin Water Management

jody.s.farhat@usace.army.mil
Office: 402-996-3840

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 15, 2011 3:29 PM
To: [redacted] NWO
Cc: [redacted] NWD02; [redacted] NWD02; Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: Flow Raise Fall 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

September, however, depending on the actual volume we end up getting, there may not be much of a "break". See 1997

-----Original Message-----
From: [redacted] NWO
Sent: Friday, April 15, 2011 3:28 PM
To: [redacted] NWD02
Cc: [redacted] NWD02; [redacted] NWD02; Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: Flow Raise Fall 2011 (UNCLASSIFIED)

I guess the question would be, when does the break from summer flow (39k) to Sep flow of 45k occur? Every foot or two of depth will help the Contractor.

[redacted]

-----Original Message-----
From: [redacted] NWD02
Sent: Friday, April 15, 2011 2:39 PM
To: [redacted] NWO
Cc: [redacted] NWD02; [redacted] NWD02; Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: Flow Raise Fall 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]
We are in the process of evacuating flood water from the reservoir system as downstream conditions permit by increasing the service level above full service. The current April 1 forecast shows 39 KCFS through the summer then 45KCFS in September through early December. We are continually evaluating the service level needed to evacuate the stored water from the system and could make another increase as early as next week. I suspect the May 1 forecast will show an even higher service level. Bottom line is, I do not anticipate "lower flows" anytime this summer. I suspect we could be in the low to mid 40's this summer starting in May and maybe low 50's this fall. The May 1 forecast will have better numbers. I hope this helps!
[redacted]

-----Original Message-----
From: [redacted] NWO
Sent: Friday, April 15, 2011 6:46 AM
To: [redacted] NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO

Subject: Flow Raise Fall 2011

Does RCC have a firm or best available date for when flows will start to raise in fall 2011?

In the ESH construction contract awards this summer, the COE is considering to request the NPS to allow moving the fall starting date for working in the Rec River forward, as early as mid August or even late July. The intent is to allow the Contractor several weeks of sandbar construction in lower flows, get in a solid base or perhaps flow shield / deflector, to facilitate bar placement once the flows are raised.

Can RCC provide, within the next few days, the best available date of when the fall flow raise will occur for use with NPS negotiations? What is the accuracy of the estimated date?

[redacted]

-----Original Message-----
From: [redacted] NWO
Sent: Thursday, April 14, 2011 4:13 PM
To: [redacted] NWO; [redacted] NWO
Cc: Svendsen, Christopher J NWO; Crane, Kelly A NWO
Subject: RE: Near term construction awards (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Please check. I don't think it hurts even if it doesn't give us any extended season this year...I think any time we can get the NPS to give us is a reason to celebrate! Thanks,
[redacted]

-----Original Message-----
From: [redacted] NWO
Sent: Thursday, April 14, 2011 2:40 PM
To: [redacted] NWO; [redacted] NWO
Cc: [redacted] NWO
Subject: Re: Near term construction awards (UNCLASSIFIED)

We could check with RCC but I don't think 15 aug gets us any low flow construction.

----- Original Message -----
From: [redacted] NWO
To: [redacted] NWO; [redacted] NWO
Cc: [redacted] NWO
Sent: Thu Apr 14 12:20:56 2011
Subject: RE: Near term construction awards (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

I jumped in on a discussion with Gia Wagner and TJ Davey yesterday morning at the ESH PDT. We suggested 15 July and got a little pushback, but she seemed definitely open to moving up from the Labor Day usual start. I think if we suggested 10-15 August we would have a good chance of getting support. July 15th or thereabouts, I'm less confident we will get support. If we need it because of the flows, I think we might want to send a detailed letter explaining why.

PB

-----Original Message-----

From: [redacted] NWO
Sent: Thursday, April 14, 2011 2:13 PM
To: [redacted] NWO
Cc: [redacted] NWO; [redacted] NWO
Subject: Near term construction awards

[redacted]

Talking with [redacted] and [redacted], the topic of the NPS being willing to discuss a modification to the construction window came up. I noticed that RCC has bumped the basic releases by 4k since our meeting. It occurred to me, prior to awarding these contracts, can we ask NPS to move the fall date forward by about 3 or 4 weeks, maybe shoot for 20 July or similar? This would allow the Contractor to mobilize and start a base before the flows start to raise. Just one more idea for ways to possibly get some habitat in the difficult construction environment forecast for the fall.

[redacted]

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Caveats: NONE

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Caveats: NONE

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Sent: Friday, April 15, 2011 3:28 PM
To: [redacted] NWD02
Cc: [redacted] NWD02; [redacted] NWD02; Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02
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Sent: Friday, April 15, 2011 2:39 PM
To: [redacted] NWO
Cc: [redacted] NWD02; [redacted] NWD02; Farhat, Jody S NWD02; [redacted] NWD02; Stamm, Kevin D NWD02
Subject: RE: Flow Raise Fall 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]
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Doug

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From: [redacted] NWO
Sent: Friday, April 15, 2011 6:46 AM
To: [redacted] NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO
Subject: Flow Raise Fall 2011

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[redacted]

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From: [redacted] NWO
Sent: Thursday, April 14, 2011 4:13 PM
To: [redacted] NWO; [redacted] NWO
Cc: [redacted] NWO; [redacted] NWO
Subject: RE: Near term construction awards (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

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[redacted]

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From: [redacted] NWO
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To: [redacted] NWO; [redacted] NWO
Cc: [redacted] NWO
Subject: Re: Near term construction awards (UNCLASSIFIED)

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From: [redacted] NWO
To: [redacted] NWO; [redacted] NWO
Cc: [redacted] NWO
Sent: Thu Apr 14 12:20:56 2011
Subject: RE: Near term construction awards (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

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Cc: [redacted] NWO; [redacted] NWO
Subject: Near term construction awards

[redacted]
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[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 15, 2011 2:39 PM
To: [redacted] NWO
Cc: [redacted] NWD02; [redacted] NWD02; Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: Flow Raise Fall 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]
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From: [redacted] NWO
Sent: Friday, April 15, 2011 6:46 AM
To: [redacted] NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO
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From: [redacted] NWO
Sent: Thursday, April 14, 2011 4:13 PM
To: [redacted] NWO; [redacted]
Cc: [redacted] NWO; [redacted] NWO
Subject: RE: Near term construction awards (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

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To: [redacted] NWO; [redacted] NWO
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PB

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From: [redacted] NWO
Sent: Thursday, April 14, 2011 2:13 PM
To: [redacted] NWO
Cc: [redacted] NWO; [redacted] NWO
Subject: Near term construction awards

[redacted]
Talking with [redacted] the topic of the NPS being willing to discuss a modification to the construction window came up. I noticed that RCC has bumped the basic releases by 4k since our meeting. It occurred to me, prior to awarding these contracts, can we ask NPS to move the fall date forward by about 3 or 4 weeks, maybe shoot for 20 July or similar? This would allow the Contractor to mobilize and start a base before the flows start to raise. Just one more idea for ways to possibly get some habitat in the difficult construction environment forecast for the fall.

[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 15, 2011 12:55 PM
To: Farhat, Jody S NWD02; [redacted] NWD02
Subject: FW: AOP meeting Jeff City Apr 14 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

FYI.

[redacted].
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE
[redacted]
[redacted] (fax)

-----Original Message-----
From: [redacted]
Sent: Friday, April 15, 2011 12:48 PM
To: [redacted] NWD02
Subject: AOP meeting Jeff City Apr 14 2011

[redacted] Thank everyone for the program yesterday. It was very informative. May I suggest some changes in the slides to help landowners have a better grasp of water runoff and river operations. ---1--- A) Slide 7 is great. B) Slide 8 needs to have "% Runoff Controlled" inserted above the headings "Plains Snowpack", Mountain Snowpack" and "Rainfall". I am assuming that the runoff indicted is basin wide. You decide if the "% Runoff Controlled" needs to be for the current year or for system design. C) Slide 9 is great. The basin boundary line indicates what runoff is controlled and not controlled. Slide 9 needs to be followed with an additional slide with a single map showing more states. D) Slide 10 is great. E) Slide 15 is the most helpful for what runoff can be controlled and what runoff cannot be controlled. It would be nice if runoff percentages for Nebraska City, Kansas City, Boonville and Hermann could be shown too. Below Gavins Point it would be nice to show percent runoff controlled and percent not controlled. The state lines need to be darker too. F) Slide 30 is very helpful too. May I suggest that river stage needs to be indicated for the different discharge rates. The rates and river stage need to be indicated for Boonville and Hermann too. From experience, cfs discharge rates are ineffective for the public's understanding of how they relate to water levels in the river for flap gate closures, bank full flows and levee overtopping situations. In every instance information that relates to water depth or stage provides a better understanding of river operations. ----2---- Individual slides that I can readily use are: 7, 8 edited, 9, with an additional one showing more states, 10, 15 edited,30 edited and 31. I want to use them in presentations to landowners of levee districts. Thank you, JBG, PE

Joseph B. Gibbs, PE, [redacted], Columbia, Missouri 65203 [redacted]-----
FAX[redacted]-----E-Mail: [redacted]

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 15, 2011 2:14 PM
To: Farhat, Jody S NWD02; [redacted] NWD02
Subject: FW: River stage from Gavins Point (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

More FYI.

[redacted].
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE
[redacted]
[redacted] (fax)

-----Original Message-----
From: [redacted]
Sent: Friday, April 15, 2011 1:20 PM
To: [redacted] NWD02
Subject: River stage from Gavins Point

[redacted], The other subject that we talked about yesterday was trying to indicate the depth of water in the river attributable to discharges from reservoir control dams. Water depths in feet attributable to such discharges at only the flow measuring stations along the river would be sufficient. This would indicate a clearer more truthful picture of river operations to landowners, levee districts, news media reporters and individuals. These people do not think in term of cfs or percentages of flow at a particular place along the river. They think in terms of river stage and forecasts they hear from the news media. Where to put this information is up to you. May I suggest that it be included with the river stage and forecast information on the USACE web site. Regards, JBG, PE

Joseph B. Gibbs, PE, [redacted], Columbia, Missouri 65203 Ph [redacted]-----
FAX [redacted]----E-Mail: [redacted]

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 15, 2011 10:32 AM
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02
Subject: FW: Key Points from AOP Meetings (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Kevin's bullets are below, my additions are:

Nebraska City:
- A couple of comments regarding interior drainage at the higher flows

Fort Peck:
- Status of gage program

Bismarck:
- discussion of tern/plover habit and construction
- status of MRAPS

-----Original Message-----
From: [redacted] NWD02
Sent: Friday, April 15, 2011 9:23 AM
To: [redacted] NWD02
Cc: Farhat, Jody S NWD02
Subject: Key Points from AOP Meetings (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]

Please edit/add to as necessary from your notes and then forward to Jody.

Nebraska City - nothing.

Fort Peck:
- please consider shaping flood water evacuation to benefit d/s F&W, specifically regarding use of warmer spill water.
- please coordinate regarding timing and magnitude of spillway flows
- the corps and upper states will be coordinating regarding unbalancing criteria for the 2011-2012 AOP
- our office will work with irrigators throughout the season regarding releases so that their pumps stay operational throughout the entire day

Bismarck:
- while it's important to note that we've seen water in the exclusive zone last year and perhaps this year at Garrison, just a couple years ago this project was at its historical low. That being said, we are concerned that we will be in exclusive again this year
- concerned about the corps' position on easements, water storage contracts, do not agree that we should be paying for our water
- we must remain vigilant about drought conditions that may return to the basin

- need to add a flood damages prevented slide to the spring presentation
- after HQ makes their decision regarding the water supply contract, we request that there be a public meeting in ND
- concerns that the high releases from Garrison for flood evacuation will affect the planned work on bird habitat on sandbars
- need to coordinate with folks when and where we plan to do the sandbar veg-clearing work this summer

Pierre:
- water control plans must consider next drought - it's not if, it's when the next one occurs
- water conservation measures should be implemented as soon as possible when the flood evacuation (wet) period ends
- concerned about sediment in reservoirs and river reaches as how it affects F&W
- government needs to address sediment issues caused by the construction of the projects ... benefits of projects are slowly eroding as reservoirs continue to fill up with sediment
- AOP must define what/how sediment will affect reservoir management
- FWS is looking to the Corps to come up with a plan for reservoir unbalancing
- Corps needs to validate d/s flood control constraints as it applies to the bi-modal spring pulse
- do not agree with the decision to charge us for our water (Garrison water supply)

Jefferson City:
- "full service flows" is different than providing flow to ensure the authorized (300'x9') navigation channel
- in order to ensure a growing navigation industry, Corps needs to provide full service for entire season and consider a longer navigation season
- navigation and flood control should be a larger focal point of the presentation
- corps should consider starting the navigation season earlier
- concerns about the FY11 budget and FY12/13 budgets as they apply to maintaining the navigation channel
- please report to corps upper leadership regarding the need to maintain funding for navigation channel maintenance
- div and dist commanders need to better emphasize the need for continued support of navigation during their quarterly congressional visits

Kansas City:
- AOP states that utilities, due to channel degradation, need to take appropriate measures to address changing river conditions ... it also needs to address how studies need to done to understand what measures have been taken and need to be taken to address the degradation issue
- the d/s flow limits need to be re-examined to see if they're a good fit with what is trying to be done regarding F&W and flood control, especially with the bi-modal spring pulse

[redacted]

[redacted]
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE
[redacted]
[redacted] (fax)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: William Lay [redacted]
Sent: Friday, April 15, 2011 9:45 AM
To: Farhat, Jody S NWD02
Subject: AOP

Dear Jody,

I appreciate the 10,000 extra releases, when we are faced with a full reservoir and are looking forward to a high water year while we are staying within flood control constraints. It looks like that four months of those releases through the end of June, might give us a quarter of a million acre feet of extra storage in the lower reservoirs. That is where I like the storage to be.

It is a little scary to see the annual flood control pool being half full this early in the year. We have a lot more water to come before the end of July.

The fellows like Dave Pope need to realize we get high flows, even though the flood control constraints would appear to keep the flows low. Last year there were many months where you weren't able to stay within all of the constraints. He is not the only one.

I wish I had a job where I could fly around the basin. I would have wanted to have had a little better weather than you had last night.

Bill Lay

[redacted] NWO

From: [redacted] NWD02
Sent: Friday, April 15, 2011 9:23 AM
To: [redacted] NWD02
Cc: Farhat, Jody S NWD02
Subject: Key Points from AOP Meetings (UNCLASSIFIED)

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- our office will work with irrigators throughout the season regarding releases so that their pumps stay operational throughout the entire day

Bismarck:
- while it's important to note that we've seen water in the exclusive zone last year and perhaps this year at Garrison, just a couple years ago this project was at its historical low. That being said, we are concerned that we will be in exclusive again this year
- concerned about the corps' position on easements, water storage contracts, do not agree that we should be paying for our water
- we must remain vigilant about drought conditions that may return to the basin
- need to add a flood damages prevented slide to the spring presentation
- after HQ makes their decision regarding the water supply contract, we request that there be a public meeting in ND
- concerns that the high releases from Garrison for flood evacuation will affect the planned work on bird habitat on sandbars
- need to coordinate with folks when and where we plan to do the sandbar veg-clearing work this summer

Pierre:
- water control plans must consider next drought - it's not if, it's when the next one occurs
- water conservation measures should be implemented as soon as possible when the flood evacuation (wet) period ends
- concerned about sediment in reservoirs and river reaches as how it affects F&W
- government needs to address sediment issues caused by the construction of the projects ... benefits of projects are slowly eroding as reservoirs continue to fill up with sediment
- AOP must define what/how sediment will affect reservoir management
- FWS is looking to the Corps to come up with a plan for reservoir unbalancing
- Corps needs to validate d/s flood control constraints as it applies to the bi-modal spring pulse
- do not agree with the decision to charge us for our water (Garrison water supply)

Jefferson City:

- "full service flows" is different than providing flow to ensure the authorized (300'x9') navigation channel
- in order to ensure a growing navigation industry, Corps needs to provide full service for entire season and consider a longer navigation season
- navigation and flood control should be a larger focal point of the presentation
- corps should consider starting the navigation season earlier
- concerns about the FY11 budget and FY12/13 budgets as they apply to maintaining the navigation channel
- please report to corps upper leadership regarding the need to maintain funding for navigation channel maintenance
- div and dist commanders need to better emphasize the need for continued support of navigation during their quarterly congressional visits

Kansas City:
- AOP states that utilities, due to channel degradation, need to take appropriate measures to address changing river conditions ... it also needs to address how studies need to done to understand what measures have been taken and need to be taken to address the degradation issue
- the d/s flow limits need to be re-examined to see if they're a good fit with what is trying to be done regarding F&W and flood control, especially with the bi-modal spring pulse

[redacted]

[redacted]
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE
[redacted]
[redacted] (fax)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWO
Sent: Thursday, April 14, 2011 8:05 AM
To: [redacted] NWD
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Farhat, Jody S NWD02; [redacted] NWO
Subject: FW: Jamestown/Pipestem Reservoir Releases - 13 April 2011 (UNCLASSIFIED)
Attachments: Jamestown-Pipestem Releases2011.xlsx

Classification: UNCLASSIFIED
Caveats: NONE

Ms [redacted].

At the present time the only flood threat that the Omaha District is tracking in North Dakota is on the James River, and specifically in Jamestown and Stutsman County. Below is a summary of the recent reservoir operations at Jamestown. I have asked my staff to include you on all future correspondence.

The POC for this work in Brian Twombly. If you have any questions please contact him. Brian's contact information is below.

[redacted].
Chief, Hydrologic Engineering Branch
Omaha District
1616 Capital Avenue, Suite 9000
Omaha, Nebraska 68102
[redacted] (work)
[redacted] (cell)
[redacted] (fax)
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Wednesday, April 13, 2011 4:27 PM
To: [redacted] NWO; [redacted] NWO; 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'; 'cr.krf@noaa.gov'; 'bcem@brown.sd.us'; 'sad_h@hotmail.com'; 'todvolk@nd.gov'
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO; [redacted] NWO
Subject: Jamestown/Pipestem Reservoir Releases - 13 April 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Releases were increased from 700 cfs to 900 cfs at Jamestown Reservoir at 16:00 hours today. Pipestem Reservoir releases were held at 400 cfs. The combined release is 1300 cfs. Flows at the James River at Jamestown gage are currently at 1,010 cfs and rising from this morning's releases.

Currently Jamestown Reservoir is at elevation 1438.1 ft with an inflow of about 3500 cfs. About 9% of the flood pool is occupied. Inflows are continuing to rise. Pipestem reservoir is at 1472.7 ft with over 36% of the flood pool occupied and inflows near 3,200 cfs. Inflows appear to have peaked at Pipestem, but they are staying high.

Let me know if you have any questions.

[redacted]
US Army Corps of Engineers
Water Control and Water Quality Section
Hydraulic Engineer
[redacted]
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Wednesday, April 13, 2011 10:42 AM
To: [redacted] NWO; [redacted] NWO; 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'; 'cr.krf@noaa.gov'; 'bcem@brown.sd.us'; 'sad_h@hotmail.com'; 'todvolk@nd.gov'
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO; [redacted] NWO
Subject: Jamestown/Pipestem Reservoir Releases - 13 April 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Releases from Jamestown Reservoir were increased from 500 cfs to 700 cfs this morning at 9:45 hours. Pipestem Reservoir releases were increased from 200 cfs to 400 cfs at 9:00 hour this morning. The combined release is now 1100 cfs. The James River at Jamestown is currently at a flow of 800 cfs; once this morning's release water reaches the gage, it should be at a flow of 1200 cfs.

Currently Jamestown Reservoir is at elevation 1437.1 ft with an inflow of about 3500 cfs. About 9% of the flood pool is occupied. Inflows are continuing to rise. Pipestem reservoir is at 1472.3 ft with over 36% of the flood pool occupied and inflows near 3,200 cfs. Inflows appear to have peaked at Pipestem, but they are staying high.

Plans are underway to go up another 200 cfs this afternoon at Jamestown Reservoir which will be a release of 900 cfs. Previously we projected the maximum release to be in the 1200 to 1800 cfs range. With the high inflows into both reservoirs, combined releases will be in the upper end of that range at 1800 cfs. All releases will be coordinated with the City of Jamestown.

We will have a conference call today at 13:00 hours. The call information is below:

Call in number (866)804-5152
Participant passcode [redacted]

Let me know if you have any questions.

[redacted]
US Army Corps of Engineers
Water Control and Water Quality Section
Hydraulic Engineer
([redacted])
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Tuesday, April 12, 2011 3:57 PM
To: [redacted] NWO; [redacted] NWO; 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'; 'cr.krf@noaa.gov'; 'bcem@brown.sd.us'; 'sad_h@hotmail.com'
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO
Subject: Jamestown/Pipestem Reservoir Releases - 12 April 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Releases from Jamestown Reservoir were increased from 300 cfs to 500 cfs today at 15:00 hours. Pipestem Reservoir releases remain unchanged at 200 cfs. The combined release is now 700 cfs. The James River at Jamestown is currently at a flow of 580 cfs and the water from the morning release is just getting to the gage.

Currently Jamestown Reservoir is at elevation 1435.8 ft with an inflow of about 1700 cfs. Slightly over 5% of the flood pool is occupied. Inflows are continuing to rise. Pipestem reservoir is at 1470.6 ft with over 32% of the flood pool occupied and inflows near 3,700 cfs. Inflows appear to have peaked at Pipestem.

Tomorrow, we are planning to make similar releases as today by going up 200 cfs in the morning and afternoon at Jamestown Reservoir. The plan is to leave Pipestem at 200 cfs tomorrow. All releases will be coordinated with the City of Jamestown.

[redacted]
US Army Corps of Engineers
Water Control and Water Quality Section
Hydraulic Engineer
[redacted]
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Tuesday, April 12, 2011 10:58 AM
To: Twombly, Brian J NWO; Temeyer, Timothy E NWO; 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO
Subject: RE: Jamestown/Pipestem Reservoir Releases - 11 April 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Releases from Jamestown Reservoir were increased by 200 cfs this morning at 10:00 hours to a total of 300 cfs. Pipestem Reservoir releases remain at 200 cfs. The combined release is 500 cfs. The current flow at the James River at Jamestown gage is 440 cfs, but this morning's releases have not reached the gage yet.

Currently Jamestown Reservoir is at elevation 1435.4 ft with an inflow of about 1700 cfs. Slightly over 5% of the flood pool is occupied. The USGS got flow measurements of 10,400 cfs at Grace City and 6,500 cfs at Kensal yesterday, so Jamestown inflows are expected to continue rising. There is about a 2 day travel time between the Kensal gage and Jamestown Reservoir. Pipestem reservoir is at 1470.1 ft with over 32% of the flood pool occupied and inflows near 3,700 cfs. Inflows appear to have peaked at Pipestem.

The next potential release is to go up again this afternoon by 100 cfs at Jamestown Reservoir. All releases will be coordinated with the City of Jamestown. If we make this release this afternoon it will be more aggressive than the 100 to 200 cfs that we put in yesterday's press release. We will still gradually step up releases, but would like to say aggressive with the high inflows. If you have any questions or concerns feel free to contact myself or Tim Temeyer.

We will also have a conference call tomorrow at 13:00 hours. Call information is below:

Call in number (866)804-5152
Participant passcode [redacted]

[redacted]
US Army Corps of Engineers

Water Control and Water Quality Section
Hydraulic Engineer
[redacted]
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Monday, April 11, 2011 3:09 PM
To: Twombly, Brian J NWO; Temeyer, Timothy E NWO; 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'
Cc: [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO
Subject: Jamestown/Pipestem Reservoir Releases - 11 April 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Pipestem Reservoir releases were increased today at 10:30 hours from 100 cfs to 200 cfs. Jamestown Reservoir releases were increased from 13 cfs to 100 cfs today at 14:15 hours. The combined releases are now 300 cfs. The current flow at the Jamestown gage is 300 cfs, but none of the release water has made it to the gage yet. Once the releases reach the gage, flows should be near 500 cfs.

Currently Jamestown Reservoir is at elevation 1434.2 ft with an inflow of over 1000 cfs. Under 5% of the flood pool is occupied. Flows have really been picking up at the James River near Grace City gage, so inflows to Jamestown Reservoir are expected to continue to increase. Pipestem reservoir is at 1467.8 ft with over 27% of the flood pool occupied and inflows of over 4,000 cfs. The Pipestem Creek at Pingree gage appears to have peaked on April 9, but flows are staying high. Attached is the current pool plot with the forecasts for each reservoir and the 1997, 2009, and 2010 pool plots.

Release plans are to go up another 100 cfs at Pipestem in the morning and 100 cfs at Jamestown in the afternoon. All releases will be coordinated with the City of Jamestown.

There will be a Jamestown/Pipestem Reservoir conference call on Wednesday, April 13 at 13:00 hours to discuss current conditions. Conference call number is as follows:

Call in number [redacted]
Participant passcode [redacted]

Let me know if you have any questions.

[redacted]
US Army Corps of Engineers
Water Control and Water Quality Section
Hydraulic Engineer

[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Sunday, April 10, 2011 4:17 PM
To: Temeyer, Timothy E NWO; 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO
Subject: Status of Releases from Jamestown/Pipestem Reservoirs - 10 April 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jamestown and Pipestem Reservoir inflows remain high near 900 and 4000 cfs respectively. The James River at Grace City has come up a lot in the last 24 hours, so I would expect Jamestown inflows to only increase. Both reservoirs are tracking with the forecast pretty closely. Jamestown has below 5% of the flood pool occupied and Pipestem has just over 20% of the flood pool occupied.

Downstream gages have remained high. Below is the status of the gages:

Ypsilanti has come down about 0.2 feet from yesterday's high this may be the peak.
Beaver Creek near Montpelier has dropped more than 1 foot from its peak on April 3 and 7.
Adrian has dropped about 0.1 feet from its peak where it was holding steady for the last 2 days.
Grand Rapids has come up about 0.1 feet in the last 24 hours.
LaMoure is forecasted to peak at 15 feet on April 12

There are still storms in the area, but so far the upper James River basin has missed most of heavy precipitation.

With the uncertainty of the downstream peak we will hold off release increases till at least tomorrow afternoon. We will evaluate the downstream conditions and update everyone in the morning.

Observations around Jamestown indicate that a lot of the snow has melted, but there is still a lot of water working its way through the system. Some of the smaller creeks have begun to drop, but most of the larger creeks and rivers are near their current highest stage.

Let me know if you have any questions.

[redacted]
US Army Corps of Engineers
Water Control and Water Quality Section

Hydraulic Engineer
[redacted]
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Saturday, April 09, 2011 2:30 PM
To: Temeyer, Timothy E NWO; 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO
Subject: Status of Releases from Jamestown/Pipestem Reservoirs - 9 April 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Following is 9 April 2011 update on status of releases from Jamestown/Pipestem Reservoirs.

Overall goal remains to start increasing releases at a rate of 100 to 200 cfs per day as soon as downstream stages have peaked and city of Jamestown is ready. Currently downstream stages remain steady at or near peak stages. City of Jamestown is ready for releases from Pipestem, but would like no more than 100 cfs from Jamestown Reservoir through Monday. The day 1 QPF from 19:00 tonight to 19:00 Sunday is showing up to 1.4 inches of precipitation. Because of the precipitation and high downstream stages, our plan for now is no release increases until at least Monday. We will re-evaluate conditions tomorrow, and send out an updated email.

As described in previous emails, once downstream stages have peaked we will initially ramp up to a combined release of 1200 cfs (900 cfs Jamestown, 300 cfs Pipestem). By the time we get to 1200 cfs combined release we will have updated forecasts and will make decisions on additional increases. Based upon current forecasts of reservoir inflows, it is expected that combined releases from the reservoirs will not exceed 1800 cfs. However our plan is to go above 1200 cfs combined release only as much as necessary. If actual reservoir inflows are less than forecasted, possibly we can hold combined releases at 1200 cfs or in the 1500-1600 cfs range. If we need to go to 1800 cfs combined, we still expect a 1200 cfs Jamestown, 600 cfs Pipestem release is workable unless we get an unusually high amount of runoff into Jamestown Reservoir. Downstream gage status is as follows:

Ypsilanti - has been rising to a new peak and holding steady for the last few hours.
Adrian - possible peak today, but holding steady.
Grand Rapids - possible peak on April 5, but beginning it has been rising slightly over the last 24 hours.
Lamoure - National Weather Service forecast of a peak on April 11.

We had aerial photography of James River taken on April 7. Downstream of Jamestown it appears that channel is relatively free of ice cover. Photography is available in ftp site as follows:

ftp://ftp.usace.army.mil/pub/nwo/Aerial_Photos_7Apr2011/

Within this folder there are 4 folders:

James_River_Above_Jamestown
Jamestown_to_LaMoure
James_River_Below_LaMoure
Waubay_to_Watertown

Call me or [redacted] if you have any questions.

Thanks,

[redacted]
US Army Corps of Engineers
Water Control and Water Quality Section
Hydraulic Engineer
([redacted])
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Friday, April 08, 2011 5:20 PM
To: 'Krogstad, Duane E'; 'klake@usbr.gov'; 'jbergqui@nd.gov'; 'rschwartzkopf@daktel.com'; 'allen.schlag@noaa.gov'; 'Steven M Robinson'; 'jfuchs@daktel.com'; 'dave_azure@fws.gov'; 'William_Schultze@fws.gov'; 'Kim_Hanson@fws.gov'; 'Amy Anton - ND Dept. of Emergency Services'; 'mihall@nd.gov'; 'michial.johnson@co.lamoure.nd.us'; 'mayorkatie@nd.gov'; 'Patrick Erger'; 'Aycock, Gordon L'; 'Kevin Low'; 'Tom Gurss'; 'Darrell Raschke (darrellraschke@midconetwork.com)'; 'kristi.turman@state.sd.us'; 'crussell@nd.gov'; 'mmarohl@gp.usbr.gov'; 'Harris_Hoistad@fws.gov'; 'gvaneeckhout@state.nd.us'; 'dfarrell@nd.gov'; 'kimberly.robbins@co.lamoure.nd.us'; 'steve.mcmiller@navy.mil'; 'tim.schaal@state.sd.us'
Cc: [redacted] NWO; Ruch, Robert J COL NWO; Schenk, Kathryn M NWO; [redacted] HQ02@NWO; [redacted] NWO
Subject: RE: Status of Releases from Jamestown/Pipestem Reservoirs - 8 April 2011

Following is 8 April 2011 update on status of releases from Jamestown/Pipestem Reservoirs.

Overall goal remains to start increasing releases at a rate of 100 to 200 cfs per day as soon as downstream stages have peaked and city of Jamestown is ready. Downstream stages remain steady. City of Jamestown is ready for releases from Pipestem, but would like no more than 100 cfs from Jamestown Reservoir through Monday. Also we have potential for rainfall over the weekend. Our plan for now is no release increases until at least Sunday. We will re-evaluate conditions tomorrow, and send out an updated email.

As described yesterday, once downstream stages have peaked would like to initially ramp up to a combined release of 1200 cfs (900 cfs Jamestown, 300 cfs Pipestem). By the time we get to 1200 cfs combined release we will have updated forecasts and will make decisions on additional increases. Based upon current forecasts of reservoir inflows, it is expected that combined releases from the reservoirs will not exceed 1800 cfs. However our plan is to go above 1200 cfs combined release only as much as necessary. If actual reservoir inflows

are less than forecasted, possibly we can hold combined releases at 1200 cfs or in the 1500-1600 cfs range. If we need to go to 1800 cfs combined, we still expect a 1200 cfs Jamestown, 600 cfs Pipestem release is workable unless we get an unusually high amount of runoff into Jamestown Reservoir. Downstream gage status is as follows:

Ypsilanti - possible peak on April 6, but holding steady.
Adrian - possible peak on April 8, but holding steady.
Grand Rapids - possible peak on April 5, but beginning to rise.
Lamoure - National Weather Service forecast of a peak on April 10-11.

We had aerial photography of James River taken on April 8. Downstream of Jamestown it appears that channel is relatively free of ice cover. Photography is available in ftp site as follows:

ftp://ftp.usace.army.mil/pub/nwo/Aerial_Photos_7Apr2011/

Within this folder there are 4 folders:

James_River_Above_Jamestown
Jamestown_to_LaMoure
James_River_Below_LaMoure
Waubay_to_Watertown

Call me or [redacted] if you have any questions.

Thanks,

[redacted]
Chief, Water Control & Water Quality Section
[redacted] (office)
[redacted] (cell)

-----Original Message-----
From: [redacted] NWO
Sent: Thursday, April 07, 2011 6:06 PM
To: [redacted] NWO; [redacted] NWO; [redacted] NWO; 'rschwartzkopf@daktel.com'; 'jbergqui@nd.gov'; 'Krogstad, Duane E'; 'Patrick Erger'; 'Aycock, Gordon L'; 'klake@usbr.gov'; Martin, Robert J NWO; 'jfuchs@daktel.com'
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Farmer, Monique L NWO; Oldham, Margaret NWO; [redacted] NWO; [redacted]ino, John J Jr NWO
Subject: Status of Releases from Jamestown/Pipestem Reservoirs

Following is status of releases from Jamestown/Pipestem Reservoirs.

We would like to start increasing releases at a rate of 100 to 200 cfs per day as soon as downstream stages have peaked and city of Jamestown is ready. We would like to initially ramp up to a combined release of 1200 cfs (900 cfs Jamestown, 300 cfs Pipestem). By the time we get to 1200 cfs combined release we will have updated forecasts and will make decisions on additional increases. Based upon current forecasts of reservoir inflows, it is expected that combined releases from the reservoirs will not exceed 1800 cfs. However our plan is to ramp up from 1200 cfs combined release level only as much as necessary. If actual reservoir inflows are less than forecasted, possibly we can hold combined releases at 1200 cfs or in the 1500-1600 cfs range. If we need to go to 1800 cfs combined, we still expect a 1200 cfs Jamestown, 600 cfs Pipestem release is workable unless we get an unusually high amount of runoff into Jamestown Reservoir. Downstream gage status is as follows:

Ypsilanti - possible peak on April 6.
Adrian - still rising.
Grand Rapids - possible peak on April 5.
Lamoure - National Weather Service forecast of a peak on April 9-10.

Based on conference call with Reed yesterday, we may be able to begin releases on Saturday. We will speak with Reed Schwartzkopf on Friday to get status of city preparations.

Attached is press release that went out today.

Call me if you have any questions.

Thanks,

[redacted]
Chief, Water Control & Water Quality Section
[redacted] (office)
[redacted] (cell)

Classification: UNCLASSIFIED
Caveats: NONE

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Caveats: NONE

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Caveats: NONE

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Caveats: NONE

Jamestown/Pipestem Reservoirs - Release Changes for 2011

			Jamestown Reservoir		Pipestem Reservoir			
			Release Change	Total Release	Release Change	Total Release	Combined Release	
Date	Time	Day	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	
March 21	1200	Mon		13		50	63	With the rising pool elevation at Pipestem, the main gate setting is reduced to 0.7 ft. to limit releases at Pipestem to less than 100 cfs. Jamestown releases are through a bypass valve that has been open all winter.
April 11	1030	Mon		13	+100	200	213	Pipestem wier flow has come up to 100 cfs and was increased to 200 cfs to begin ramping up releases to evacuate flood storage.